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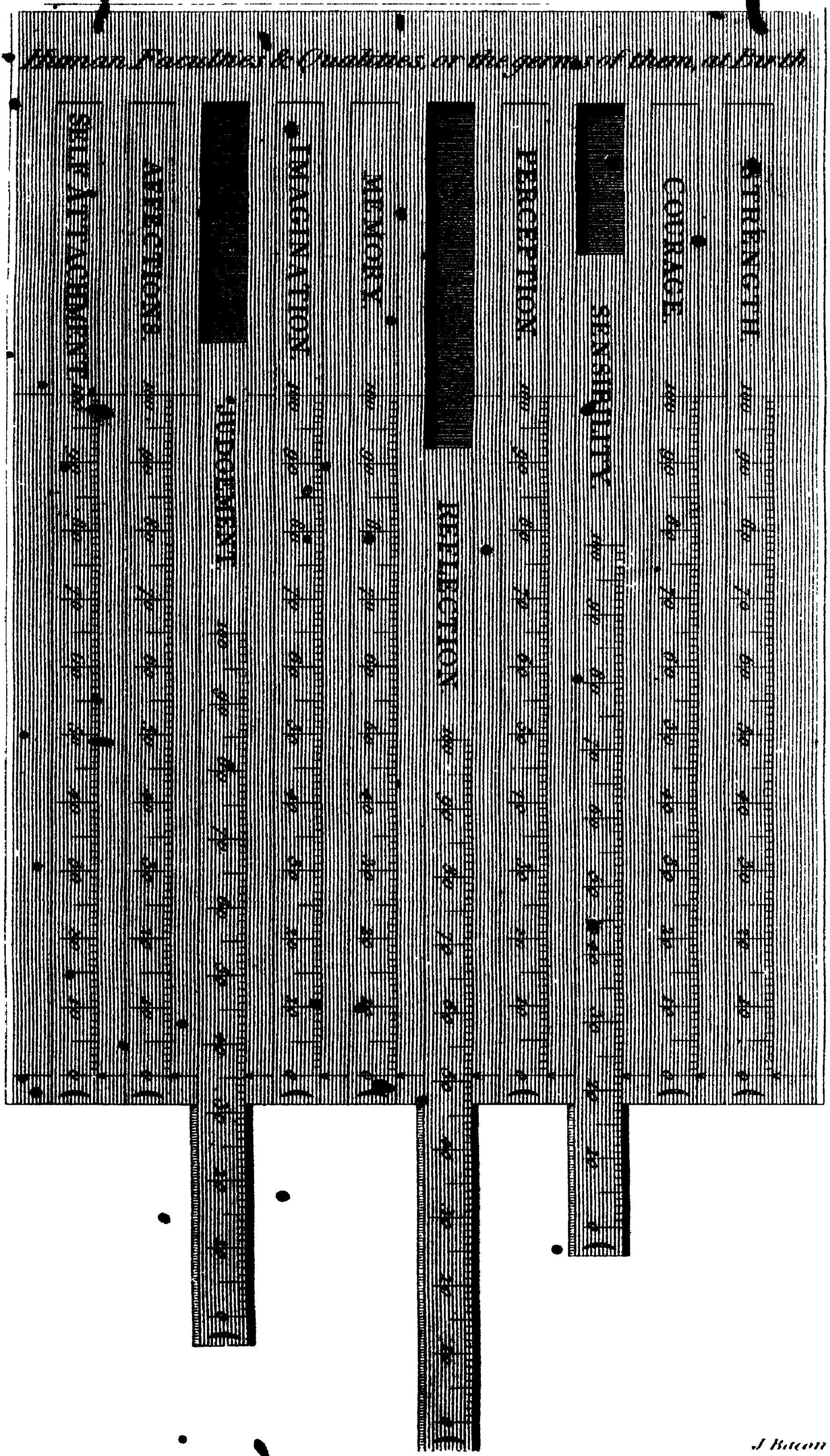

Human Faculties & Qualities, or the germs of them, at Birth

J Bacon sculp

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THE

FAMILY CYCLOPÆDIA:

BEING

A Manual

OF

USEFUL AND NECESSARY KNOWLEDGE,
ALPHABETICALLY ARRANGED;
COMPRISING
All the recent Inventions, Discoveries, and Improvements,
IN
Domestic Economy, Agriculture, and Chemistry;
THE
MOST APPROVED METHODS OF CURING DISEASES,
WITH THE
Mode of Treatment in Cases of Drowning, other Accidents, and Poisons;
OBSERVATIONS ON DIET AND REGIMEN;
A COMPREHENSIVE ACCOUNT OF THE MOST
STRIKING OBJECTS IN NATURAL HISTORY,
Animate and Inanimate;
AND A DETAIL OF VARIOUS PROCESSES IN THE
ARTS AND MANUFACTURES:
ALSO,
A CONCISE VIEW OF
THE HUMAN MIND AND THE PASSIONS,
With their particular Application to our Improvement in
Education and Morals.

BY JAMES JENNINGS.

IN TWO PARTS.

PART II.—K TO Z.—AND APPENDIX.

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THE

FAMILY CYCLOPÆDIA.

PART II.

K.

Kale, the sea. See SEA-KALE.

Kalendar. See CALENDAR.

KALI, SALT WORT, or *Salsola*, a genus of plants, consisting of twenty-five species, natives of Siberia and the south of Europe; two common to our own sea-coasts. The following are the species most deserving of notice:

The *Kali*, an herbaceous decumbent annual plant, rising five or six inches in height, with branches issuing in all directions: the leaves are spinous, rough, and subulate; flowers axillary; calyx margined: indigenous to our own sea-shores.

The *Rosacea*, is an herbaceous, erect, annual plant, five or six inches high; indigenous to Asia.

The *Soda*, with herbaceous spreading leaves, unarmed, long, and fleshy; a native of the south of Europe.

The *Vermiculata*, is a shrubby perennial plant, with hoary and prickly branches, rising three or four feet high: indigenous to Spain and Siberia.

All the species, like the *salicornia*, or kelp, are employed for obtaining the soda, or barilla of commerce. See BARILLA, SODA, and KELP.

KALI, a term applied, in some of

the pharmacopœias, to potash, and several of its combinations.

KELP, **Glasswort**, **Sal-Kali**, or *Salicornia*, a genus of plants, consisting of nine species, found on the sea-shores of most countries; the two following are indigenous to England: the *herbacea*, or Herb glass-wort, with jointed, thick, succulent stalks, trailing on the ground; and the *fruticosa*, or Shrubby glass-wort, with a shrubby erect stem. They are both perennial, and found largely on the Sheppy island; and are the kelp of the common people, who cut them towards the latter end of summer when they are fully grown, on account of the great quantity of alkali which they contain; to obtain which they first dry them in the sun, and then burn them into ashes, whence the salt is easily procured in a pure state. But the ashes alone are often used in the manufacture of soap and glass.

The term *kelp* is applied not only to these particular plants and their ashes, but also to the ashes of various kinds of sea-wrack, which are dried and burnt in the same manner, on various parts of the sea-coast of this country. The produce is an impure carbonate of soda, and which is used in large quantities in the manufacture of black bottle glass. See Sea Wrack.

The ashes of kelp make an excellent manure.

KERMES, round reddish grains, about the size of peas, found in Spain, Italy, and the south of France, adhering to the branches of the scarlet oak. They are the nidus of a minute red animal called *coccus ilicis.* The confection of alkermes, a useless sweetmeat, or syrup, formerly found in the shops, was prepared with these.

Key. See Lock.

Kibes. See Chilblains.

KID, the young of the goat. See Goat.

KIDNAPPING, a forcible taking away, or seizing of, any man, woman, or child, from their native soil, and conveying them to foreign countries. Persons guilty of such crimes are liable to fine and imprisonment.

Kidney Bean. See Bean.

KIDNEY-VETCH, **Lady's Finger**, or *Anthyllis*, a genus of plants consisting of twenty-one species, some herbaceous, some shrubby; chiefly natives of Africa and the south of Europe. The *vulneraria*, only, is indigenous to our own country: it is triennial, with yellow flowers, sometimes inclining to reddish. Most of the rest are cultivated in our gardens for their beauty.

KIDNEYS, or *Renes*, two abdominal viscera, shaped like a kidney-bean, which secrete the urine. They are situated on each lumbar region, behind the peritoneum. They are generally surrounded with more or less fat. The absorbents which accompany the blood-vessels of the kidneys, terminate in the thoracic duct. The excretory duct of each viscus is called the ureter. It commences at the middle, or pelvis of the kidney, where the blood enters it, and is at first a large membranous bag, which diminishes like a funnel, till it becomes a long narrow channel. The ureters convey the urine from the kidneys to the bladder, which they perforate obliquely.

Nephritis, or *inflammation of the kidneys*, is accompanied with the symptoms common to other inflammations, but its distinguishing mark is pain in the region of the kidneys, which is sometimes obtuse, more frequently pungent. It is also often accompanied by a shooting along the course of the urethra, and is sometimes attended with a drawing up of the testicle, and a numbness of the limb on the affected side; these last symptoms also attend the inflammation arising from a stone in the kidney or urethra. This disease is also accompanied with frequent vomitting, with costiveness, and colic pains. The urine is usually of a deep red colour, and voided in small quantity at a time.

The remote causes of this disease may be various; but the most frequent is that of calcareous matter obstructing the urinary ducts, or calculi formed in the pelvis of the kidney, and either remaining there or falling into the ureter.

The cure of this disease consists in bleeding, external fomentation, frequent emollient clysters, cooling purgatives, and by the free use of mild demulcent liquids. If the kidney should suppurate, the treatment is to be nearly the same as in the suppuration of the liver. See Liver. The patient is also to take infusions of linseed, or decoction of marsh-mallow root for his common drink, after the abscess is broken, in order to dilute the urine, and prevent it stimulating the surface of the ulcer. The Peruvian bark may also, in this stage, be advantageously given. The food should be such as to keep up the strength of the patient. Lying on the back, as it prevents the passage of the urine into the bladder, should be avoided. As, however, this is always an alarming complaint, a physician ought, as soon as possible, to be consulted.

Inflammation of the kidneys of horses, is sometimes caused by the immoderate use of diuretics. In this disease the animal usually stands with his hind legs stretched out; there is a tenderness about the loins, and a stiffness in the motion of the hind parts. He frequently attempts to void his urine, but only a few drops, with pain and difficulty, are expelled: this complaint is also sometimes attended with symptoms of colic, the horse often lying down and rolling. The best remedies are plentiful bleeding, emollient clysters, an oily laxative, and covering the loins with a fresh sheep-skin, the wool side outwards. But diuretics must be, by all means, avoided.

KILDERKIN, a cask containing 18 gallons beer measure.

Kilkenny Coal. See Coal.

KILN, or stove, a fabric formed for admitting heat, in order to dry or burn things contained therein. A variety of kilns are used in this country, such as brick-kilns, tile-kilns, malt-kilns, lime-kilns, &c: we cannot enter into a description of each of these, but we may observe that malt-kilns have been latterly heated by *steam*, and from the ease and uniformity with which malt can be heated by such process, it must not only be the most economical but the best.

KING-FISHER, or *Alcedo*, a genus of birds, containing upwards of forty species. It chiefly frequents rivers, and lives on fishes, which it catches with curious dexterity; swallows its prey whole, but brings up the undigested parts; though short winged, it flies with great swiftness; its predominant colour is blue, in different shades; nostrils small, and in most covered with feathers. The following are the chief: The *cristata*, or Crested king-fisher: two varieties. The *formosa*, or Splendid king-fisher; the most beautiful of the genus, with tail short, body yellowish green; shoulders, throat, and rump yellow; wings and crown blue; bill yellowish horn-colour; head with a bright yellow stripe on each side; smaller wing coverts edged with yellow; legs reddish brown; native of South America. The *ispida*, or Common king-fisher, the *Halcyon* of the poets;—the *purpurea*, or Purple king-fisher;—the *alcyon*, or Belted king-fisher, of which there are four varieties;—and the *chlorocephala*, or Green-headed king-fisher.

KINO, or Gum Kino, formerly called *red astringent gum*, is the product of an unknown tree. It has been brought from the eastern as well as the western hemisphere; from Africa, the East Indies, Botany bay, Jamaica, &c. The kino now found in the shops comes from India: it is said from Amboyna. It is inodorous, very rough, and slightly bitter when first tasted, but afterwards sweetish. It is in small, dark-brown, shining, brittle fragments, which appear like portions of dried extract broken down. Indeed, we have always suspected kino to be manufactured from log-wood, or some such astringent woods, and we still suspect that it is the product of no one tree. The best menstruum for it is diluted alcohol.

Kino is a powerful astringent. Like catechu it is employed in obstinate diarrhœas, uterine and intestinal hæmorrhages, and fluor albus; but it is less certain in its operation than catechu. It is applied externally as a styptic, and to give tone to, and diminish the discharge of, flabby and ill-conditioned ulcers. It is given internally in substance, in the form of watery infusion, or in tincture. The dose in substance is from ten grains to half a drachm. The *Tincture*, which is made with one ounce and a half of kino, in powder, and one pint of proof spirit, macerating for fourteen days, and straining, is given in doses from one drachm to two. It should not be forgotten that solutions of isinglass, sulphate of iron, tartarised antimony, the alkalies, the strong acids, nitrate of silver, muriate of mercury, and superacetate of lead, are incompatible in prescriptions with kino.

KITCHEN, an apartment, or room destined for the dressing of provisions, and preparing them for the table.

For *steam-kitchens*, &c., see BOILER: for *ship kitchens*, see DISTILLATION.

Kitchen Garden. See GARDENING.

Kite. See FALCON.

Kittiwake. See GULL.

KNEE, in anatomy, the joint where the leg is joined to the thigh.

The *knee-pan*, or cap, called in anatomy *patella*, is a small flat bone, which, in some measure, resembles the common figure of a heart, with its point downwards, and is placed at the fore-part of the joint of the knee. The use of this bone is to defend the joint from injury; it also tends to increase the power of the muscles, which act in the extension of the leg.

The knee is liable to several accidents and diseases, the principal of which is WHITE SWELLING, which see.

Knee-Holly. See BUTCHER'S BROOM.

Knee-pan. See KNEE.

KNOT-GRASS, or *Polygonum aviculare*, is found in the wastes of our own country, with short, oblong, or linear leaves, and a procumbent herbaceous stem. It is of no importance.

KNOWLEDGE, that information, or those ideas, which we acquire, or are impressed upon the mind, by the exercise of both the bodily and intellectual faculties. The best knowledge is that which enables us to act most virtuously, because virtue is the foundation of genuine happiness. *Learning*, properly so called, is not essential to a virtuous life, although considerable knowledge most undoubtedly is so: for ignorance is, in innumerable instances, the parent of error and of crime.

All our knowledge is derived primarily from the external impressions which we receive from time to time after we come into the world; and, of course, from those objects by which we are immediately surrounded. Hence the necessity of EDUCATION, and of such an education too as shall impart to us that knowledge which will enable us to act with propriety in that society of which we form an integral part. See CIRCUMSTANCES, EDUCATION, and MIND.

KNOWLEDGE IS POWER: omnipotent her sway,
When Truth and Justice lead her onward way:
Effects evolving as she speeds along,
In one wide sweeping flood, clear, bright, and strong.
Knowledge is power—O were such power ne'er us'd
For aught save good; but ah, how oft abus'd!

L.

LABDANUM, or LADANUM, a resinous juice exuding from the leaves of the *cystus creticus*, and formerly an ingredient in the stomachic plaster of the pharmacopœias, but now expunged.

LABORATORY, or ELABORATO-

RY, in chemistry, the room or office in which the processes are carried on.

The laboratory is generally constructed with an open chimney, in such a way, that if any unexpected explosion should take place, the ignited materials might find a ready escape. It is furnished, also, with suitable benches, mortars, a sand heat, a still, a variety of glass vessels, consisting of retorts, matrasses, hydro-pneumatic apparatus, funnels, &c. &c. And a circular furnace for the purpose of boiling, melting, and other processes requiring the immediate contact of fire. But, indeed, from the great variety of operations in chemistry, elaboratories are constructed and fitted up very differently. The light, however, in them all, is most desirable, when thrown down from above; and of course an elaboratory ought not to have any room, loft, or building over it. One of the most complete elaboratories may be seen at the Royal Institution. A description, with plates, of this elaboratory, are prefixed to Mr. BRANDE's *Manual of Chemistry*.

It may be some satisfaction to persons of small means, to be informed, that most of the admirable researches of SCHEEL, PRIESTLY, CRAWFORD, and BERTHOLLET, were conducted by means of a very simple and cheap apparatus.

LABOUR, in a general sense, implies the exertion of human strength in the performance of any kind of work.

How irksome soever may be bodily labour to persons unaccustomed to it, and injurious as excessive labour unquestionably is, yet that moderate labour furnishes one of the best means for the preservation of health, and the prolongation of human life, can admit of no question. We do not mean of course by such labour, one uniform and constant motion of the body, such as that of some mechanical employments, but the varied labour which is found, for example, in the routine of agricultural employments throughout the year. By moderate labour we mean, such as induces a certain degree of fatigue, but not such as that, upon a cessation of the labour, the faculties of both body and mind are so much exhausted as to be incapable of action, and require considerable rest, or even sleep, to recover their healthy tone. Again, what is moderate labour, must, of course, depend upon the education, habits, and strength of the individual. Four or six hours a day, however, of muscular exertion, divided into two, or perhaps three alternations of activity, with distances of rest between them, equal to the time employed in labour, whether that labour be walking, riding, digging in a garden, &c. &c. will be moderate for those who are in any degree accustomed to it; and those who are not, cannot too soon adopt some plan by which their health may be, by such means, promoted and improved. The injunction that man should eat his bread by the sweat of his brow, is, contrary to the received opinion of it, a most benevolent one. Nor, seeing that labour is so necessary to our health, should it be considered degrading: indeed, that which contributes so essentially to our well being cannot be degrading. We do not know how far some of our patricians may be disposed to go, in setting themselves an example of labour, but of this we feel assured, that in a moral and political view, and for their health's sake, such example would be fraught with incalculable benefit, not only to themselves, but to mankind. In a word, as we have said under the article GYMNASTIC EXERCISES, (to which, as well as to EXERCISE, we refer our readers,) let labour become FASHIONABLE, and a considerable improvement in the health and morals of the whole community must necessarily be the result. See also EMPLOYMENT.

Labrador stone. See FELDSPAR.

LABURNUM, TREE-TREFOIL, or *Cytisus*, a genus of plants, comprehending twenty-five species, scattered over the globe; several of them are arboreous and lofty. Those most worthy of notice, and chiefly cultivated in our gardens, are the following:

The *laburnum*, or large deciduous cytisus; the *sessifolius*; the *nigricans*, or dun-coloured cytisus; the cytisus with erect spikes of flowers proceeding from the sides of the branches; the cytisus, with single lateral foot stalks to the flowers; the cytisus, with flowers collected in heads and branches lying on the ground; the cytisus, with lateral bunches of flowers; the cytisus, with single spear-shaped narrow leaves; the cytisus, with lateral flowers, hairy leaves, and an herbaceous stalk; the cytisus, with pinnated leaves.

The first species is a native of Switzerland, and grows to be a very large tree. The second, third, fifth, sixth, eighth, ninth, and tenth species, are natives of the southern parts of Europe, and as they grow to be eight or ten feet high, and in May are beautifully loaded with long strings of yellow flowers, make a very agreeable appearance in the garden.

They are all propagated by seeds, which should be sown in March in a bed of good fresh light earth. They require afterwards very little care or attention, except to be guarded from snails and weeds.

The fourth, seventh, and eleventh species are natives of the Indies, and too tender to bear the open air of this country; they must, therefore, be placed in a warm stove; and may be raised from seeds sown in a hot bed.

LAC, a substance formed by an insect, supposed the *coccus lacca*, and deposited in different species of trees, chiefly in the East Indies. It appears to be a secretion from the female insect, for the purpose of gluing its eggs to the branches of the tree upon which they are placed; and, also, for the purpose of providing the young larvas with food as soon as the rays of the sun have given them animation. It consists, upon a minute examination, of a multitude of minute bags, each bag having a variety of distinct cells like a honey-comb, but of a different shape. The lac insect is propagated in India in a similar way which the cochineal insect is; and for the purpose of the production of lac. The various kinds of lac distinguished in commerce are *stick lac*, which is the substance in its natural state, investing the small twigs of the tree; *seed lac*, which is the same broken off, and, when melted, called *shell-lac*. According to Mr. HATCHET, these different lacs are composed of the following substances:—

	Stick lac.	Seed lac.	Shell lac.
Resin	68,0	88,5	90,9
Colouring matter	10,0	2,5	0,5
Wax	6,0	4,5	4,0
Gluten	5,5	2,0	2,8
Foreign bodies	6,5	0,0	0,0
Loss	4,0	2,5	1,8
	100	100	100

When water is poured on stick lac coarsely powdered, it soon begins to turn red, and, by heating, a crimson coloured solution is obtained. Alcohol dissolves a large portion of all the kinds of lac. Potash and soda dissolve, also, all kinds of lac. Lac forms the basis of sealing wax, (see that article.) It is also used as an ingredient in spirit varnish, and lacquer. Shell lac, as it does not dissolve in water, forms a convenient cement for broken glass and earthenware, being melted by the flame of a candle, or other method, if the articles afterwards used be not made hot so as to melt the lac. Lac also affords a beautiful scarlet dye. See the next article.

WHITE LAC, a waxy substance brought from India, and which appears to have a close analogy to bees' wax. An acid has been obtained from this substance, which has been called *laccic acid.*

LAC DYE, and **LAC LAKE**, two articles now regularly imported from the East Indies into this country, and used for the purpose of dyeing a beautiful scarlet. They appear to be the colouring matter of seed lac, obtained from it in India by a process not generally known. Both these articles are in lumps or cakes, of a dark reddish, or blackish colour. They are obtained in commerce of very different degrees of purity. A Mr. Wright, of Great St. Helen's, Bishopgate Street, prepares a liquid dye from them, which, we understand, imparts a more permanent and beautiful scarlet to cloth, yarn, stuff, and silk, than can be obtained from even cochineal itself.

Lactic Acid. See MILK.

LACE, in commerce, a work composed of many threads of gold, silver, silk, cotton, flax, &c. interwoven one with the other, and worked upon a pillow with spindles, according to the pattern designed; the open work being formed with pins, which are placed and displaced as the spindles are moved.

Bone lace, is a lace made much in the same manner as that of gold and silver; the pattern of the lace is fixed upon a large round pillow, and pins being stuck into the holes, or openings in the pattern, the threads are interwoven by means of a number of bobbins, made of bone or ivory, each of which contains a small quantity of fine thread in such a manner, as to make the lace exactly resemble the pattern. Lace of this kind is made in great quantities in Buckinghamshire.

But within these few years, a considerable revolution in the manufacture of lace has taken place. *Cotton,* even in the making of bone lace, has completely, in England, superseded the use of flax. And at Nottingham, and some other places, is now manufactured a lace of finer quality, and considerably more elegant in its appearance, than any bone lace whatever, at about one-third the price of bone lace. This lace is made by the loom, and is contradistinguished by the name of British lace.

No gold, or silver, or copper thread lace, fringe, or any work made thereof, can be imported, under the penalty of 100l., and forfeiture of the goods.

Thread lace, of foreign manufacture, must be imported in quantities of not less than 12 yards, unless of the value of 2l. or upwards per yard, or solely for private use; if lace, so imported, shall be joined or pieced, it is liable to forfeiture. Foreign lace can only be imported into the port of London.

Licenses must be obtained annually from the stamp office for the sale of foreign and British lace.

LACHRYMAL GLAND, a gland situated above the external angle of the orbit, in a peculiar depression of the frontal bone. It secretes the tears, and conveys them to the eye by its excretory ducts.

LACKERS, or LACQUERS, are varnishes, generally more or less yellow, applied to tin, brass, and other metals, to preserve them from tarnishing, and to improve their colour. The basis of lacquers, is a solution of the resinous substance *lac,* in spirit of wine: for which purpose the spirit should be pure. One pint of rectified spirit, and three ounces of shell lac, digested in a moderate heat for a few days, and to which may be added either gamboge, or annatto, according as the lacquer is wanted, a yellow or an orange colour, make a good lacquer. The quantity of colouring matter must be, of course, proportioned to the deepness of the colour desired. One ounce of gamboge, or annatto, may be sufficient for common purposes.

LACTEALS, in anatomy, the absorbent vessel of the mesentery, which originate in the small intestines, and convey the chyle thence to the thoracic duct. They are very tender and transparent, and possessed of an infinite number of valves, which, when distended with chyle, give them a knotty appearance. See THORACIC DUCT.

LADY-BIRD, or *Coccinella,* a genus of insects, comprising one hundred and sixty-four species, scattered over the globe. The following are chiefly worthy of notice. The *coccinella septempunctata,* Common lady-bird, or lady-cow, with red shell-like wings, having seven black dots; inhabits Europe; the larva has a disagreeable appearance, is of a long oval shape, has a black tail varied with red and white spots; it resides on various plants, and is metamorphosed from its chrysalis state in May and June. The *octodecim punctata,* has yellow wings, with eighteen black dots; a very beautiful insect, about the size of the common lady-bird; found in the gardens of Europe.

LADY-DAY, in law and chronology, the twenty-fifth of March. One of the quarter days into which the year is divided.

Lady's-bed-straw. See CHEESE-RENNET.

Lady's-bower. See CLEMATIS.

Lady's-comb. See CICELY.

Lady's-cushion. See SAXIFRAGE.

Lady's-finger. See KIDNEY VETCH.

LADY'S-MANTLE, or *alchemilla*, a genus of plants comprehending six species, of which three are common to our own pastures or mountains. One, the *vulgaris*, was, till lately, in some of the pharmacopœias, as an astringent in hæmorrhages and fluor albus; but is of no importance.

Lady's-seal. See BRYONY.

LADY'S-SLIPPER, or *Cypripodium*, a genus of plants, consisting of seven species, of which the *parviflorum* is one of the most elegant; it is an inhabitant of North America; and nearly resembles the *calceolus*, or common European lady's-slipper; but is taller, and its interior petals are longer, narrower, and more curled.

Lady's-smock. See CARDAMINE.

Lady's-traces. See TWAY-BLADE.

LAKE, a beautiful red, or crimson pigment. It is generally obtained from cochineal; but it may also be procured from madder, Brazil-wood, and scarlet rags; a purple lake may be obtained from logwood, by means of a solution of tin.

The following is said to be the method in which the best lake is most commonly obtained. Dissolve one pound of pearl-ash in two quarts of water, and let the solution be filtered through paper. Add to it one pound of clean scarlet cloth shreds, and two quarts of water; let the whole be boiled till the rags are perfectly divested of their colour; they are then to be taken out and pressed. Three additional pounds of shreds are now to be boiled in the same solution, and during the process a pound and a half of the bone of the cuttle-fish, are to be dissolved in one pound of aquafortis. This liquid is then to be mixed with the former solution, and the whole, on being suffered to subside, will deposit a sediment which is *lake.* The liquor is then to be poured off, and the sediment mixed four or five times successively, with two gallons of spring water, that all saline particles may be extracted. Lastly, it is to be drained and dropped through a funnel on clean boards, when it will assume the form of cones, or pyramids, in which it must be suffered to dry.

LAKE, in geography, a collection of waters, of more or less extent, and having no immediate communication with the sea.

Lakes as ornaments in landscape and sylvan scenery, have often an exquisite effect. The lake of Geneva is well known, as one of great beauty; our English lakes are also very beautiful; they have not only been extolled by our poets, but at the present time, WORDSWORTH and SOUTHEY, reside at or near Keswick lake, in Cumberland;

> "And from their harps melodious pour
> Aerial music down the listening vales."

Lama. See CAMEL.

LAMB, the young of sheep. See SHEEP,

Lamb's lettuce. See CORN-SALLAD.

LAMENESS, an inability of moving any of the limbs with their natural ease and freedom. It may arise from various causes. When this defect arises from natural deformity, it is commonly incurable. If it be occasioned by accident, such as dislocation of a bone, fractures, &c. it can be cured only by a skilful reduction of the dislocated or fractured limb. Sometimes, however, lameness, and rigidity of the limbs, may be cured by emollient fomentations, the warm bath, &c.; and sometimes warm stimulating liquids, such as the camphor liniment, British oil, &c. applied to the part, may be of service. See BATH, BATH-WATERS, and RICKETS.

LAMENESS OF HORSES, may be divided into four kinds: of the hoof and parts contained within it; of the muscles; of tendons, ligaments, &c.; and of the bones. Each of these divisions are subject to several diseases. See STRAINS, SPAVINS, RING-BONES, CURB, &c.

A peculiar conformation of the limbs renders a horse more subject to lameness of one kind than another. Thus horses with short pasterns, and whose fore legs incline much under the body, are most liable to bony excrescences, such as splents, ring-bones, &c. Horses with long pasterns, are more liable to ligamentary lamenesses than others, but they are less exposed to those diseases arising from concussion, such as ring-bones. Horses which are cat-hammed, or cow-houghed, are particularly subject to spavins, curbs, and thorough-pins. The tendency to lameness of every description, is greatly increased by working a horse at too early an age, and particularly by placing too much weight upon them at that period.

Farmers, and breeders of horses, ride them from three years old, until their feet and legs, from premature exertion, are so much injured, as to render their soundness doubtful. But though such horses do not manifest lameness in any particular leg, yet, the injury which they have received may be detected by their stepping short with their fore legs, and pressing principally upon the toe; and upon examining the legs when standing still, if the pasterns, particularly long ones, appear perpendicular, and not oblique in their direction; or if the fetlock joint knuckles over, or, in other words, bends forward, little doubt may be entertained of their being unsound. In all cases of lameness, unless the cause is evident, the foot should always be examined carefully in the first place. And if it occur after the horse is newly shod, it may be suspected to be caused by the shoeing; either by the foot being *pricked* as it is called, or by the awkwardness of the fittings, &c. of the shoe itself.

LAMP, a vessel or apparatus of various forms, containing oil, spirit, gas, &c., generally with a wick, designed to give light in the absence of the light of the day, and also for other purposes.

The most common form of the lamp is that used for illuminating streets and houses, &c. by means of oil. It consists, generally, of an inverted glass bell, across which is fixed a wire, to which a circular cup or burner, which contains the oil and wick, is suspended. The whole is surmounted by a moveable head, having air-holes.

Argand's lamp is a very ingenious contrivance, and the greatest improvement in oil lamps, which has yet been made. It is the invention of a citizen of Geneva; the principle on which the superiority of this lamp depends is, the admission of a larger quantity of air to the flame, than can be done in the common way. This is accomplished by making the wick of a circular form, by which means a current of air rushes through the cylinder on which it is placed, with great force; and along with that which has access to the outside, excites the flame to such a degree, that the smoke is entirely consumed. Thus both the light and heat are prodigiously increased, at the same time that there is a very considerable saving in the expense of oil. This lamp has been for some time very much in use; and is applied not only to the ordinary purposes of illumination, but also to chemical operations.

The *gas-lamp*, or burner, has, however, in street illuminations, and many private dwellings, superseded even the Argand's lamp, by the superiority of its light, and, upon a large scale, by its greater cheapness. The forms of the gas burners are as various as fancy or convenience may suggest. They are, indeed, now become so very common, as not to need any further description. It is, however, necessary that we should notice here

The Safety-lamp, invented by Sir Humphry Davy, for the use of coal-miners, which is unquestionably one of the greatest improvements in the construction of lamps, that was ever brought under the notice of mankind. The properties of flame, and the principle of safety adopted in this lamp, have been already adverted to, under the article Flame. It is obvious, from what has been there said, that if the flame of a common lamp be every where properly surrounded with *wire-*

gauze, and, in that state, immersed into an explosive gaseous mixture, it will be inadequate to its inflammation; and that part only will be burned, which is *within* the cage, communication to the inflammable air without being prevented by the cooling power of the metallic tissue: so that, by such a lamp, the explosive mixture will be consumed, but cannot be exploded. This lamp, as recommended by Sir Humphry Davy, for general use, consists of a cylinder of wire gauze, about four inches diameter, and a foot in length, having a double top, securely and carefully fastened, by doubling over, to a brass rim, which screws on to the lamp itself below. The whole of the wire gauze is protected, and rendered convenient for carrying, by a triangular wire frame, and a ring at the top. If the cylinder be of twilled wire-gauze, the wire should be at least of the thickness of one-fortieth of an inch, and of iron or copper, and 30 in the warp, and 16 or 18 in the woof. If of plain wire gauze, the wire should not be less than one-sixtieth of an inch in thickness, and from 28 to 30, both warp and woof. Wire-gauze for lamps, must not be made of, nor covered with, any easily combustible metal: fine brass wire is improper, on account of the zinc it contains, and the iron wire should not be tinned. The body of the lamp should be copper riveted together, or of massy cast brass, or cast iron; the screws should fit tight; no aperture, *however small*, should be suffered to exist in the body of the lamp, and the trimming-wire should move through a long tight tube. See Davy, *on the Safety Lamp*. 8vo. 1818.

Several other lamps are also to be met with in the shops. A *spirit lamp*, for chemical experiments, is one of these. A *portable gas lamp*, invented by Mr. Brande, consists of a hollow, glass globe, of adequate thickness, and surmounted by a stop-cock and burner, resting upon, and communicating with a square hollow pedestal of sheet copper. The glass globe is fitted with a brass cap at the bottom, firmly screwed into the copper box, and communicating with it by an aperture in the bottom of the globe. On one side of the copper box is a screw-hole, with a valve, opening inwards, to which the condensing syringe is attached, for the purpose of forcing in the carburetted hydrogen. At the top of the globe is a brass cap, surmounted by a stop-cock of very small bore, opening into the chamber, to which the burners are attached. A *tar lamp* has been also invented in America, in which tar is burnt instead of oil. It consists of a fountain or reservoir, to supply and preserve a constant level, and a lamp which receives the fountain-pipe at one end, and at the other has a burner for the tar: which is merely a small cup placed in the axis of the lamp, and supplied with tar from the fountain. A draught tube is fixed in the lanthorn, or external part of the lamp, and air is admitted by a hole at the bottom. The current of air in passing through the lamp, envelopes the burner, and urges the flame, and the draught-tube conveys off the smoke.

Oil burnt in lamps, instead of tallow candles, for domestic purposes, is said to be more economical. But as, to effectuate such economy, the oil should be of a common kind, the combustion of which produces a considerable stench, except for common occasions, we think that the tallow candle is still to be preferred.

LAMP-BLACK, a well-known light, black powder, used in colour-making, staining rooms, &c. It is prepared principally by turpentine manufacturers, from refuse and residuary resin, which is burned in a furnace, so constructed, that the dense smoke arising from it may pass into chambers hung with sacking, where the soot is deposited, and, from time to time, swept off, and sold without any further preparation. When lamp-black has been heated red-hot, in a close vessel, it may be considered a very pure carbon. See Carbon, and Colour-making.

It is said that lamp-black, if kept for some time closely confined, and afterwards suddenly exposed to the air, is liable to undergo spontaneous inflammation; and that destructive fires have been occasioned by it.

LAMPAS, or LAMPERS, a spongy elastic enlargement of the roof of a young horse's mouth, just behind the nippers of his upper jaw, by which the bars of the mouth often project below the surface of the upper teeth. The actual cautery is often recommended in this complaint; but, in general, there is no necessity for its application; it being usually found sufficient to pass the point or edge of a sharp pen-knife, or lancet, transversely and longitudinally over the puffy and prominent part, so as to let it bleed for a few minutes; it should afterwards be washed with a solution of alum and water, and no further inconvenience need be feared.

Lampern. See LAMPREY.

LAMPREY, or *Petromyzon*, a genus of fishes, consisting of four species. They adhere firmly to rocks and other bodies by the mouth; the body is eel shaped, slippery and mucous; they live a long time out of the water; feed on worms, insects, less fishes, and dead bodies.

The *Marinus*, True, or Sea lamprey, sometimes weighs four or five pounds; its colour is dusky, irregularly marked with dirty yellow. Though in shape this animal resembles an eel, yet it is thicker, and of a more clumsy form. Found at certain seasons in the British rivers. They are sea fishes, but, like the salmon, quit the salt-waters about the end of winter, and, after a few months, return again to the ocean. The lampreys caught in the Severn are considered a delicacy; whilst they are not eaten in Ireland, and in Scotland they are detested. They are a heavy surfeiting food, as the death of Henry I. will sufficiently testify.

The *Fluviatilis*, Lesser, or River lamprey, found in the Severn, the Thames, and the Dee.

The *Brancialis*, Pride, or Lampern, found in several of our rivers, and the *planeri*, or Planer's lamprey, found in the rivers of Thuringia and Germany, make up the tribe. The river lamprey rarely exceeds fourteen inches in length. Like the other fishes of this genus, there is, between the eyes, a spout-hole or orifice, resembling that of the cetaceous fishes, and probably for a similar purpose, that of ejecting water from the throat and lungs. This species, as well as the larger kind, are eaten potted, and highly seasoned. But the epicure recommends them, not the physician.

LANCE, a fish. See LAUNCE.

LANCE-WOOD, a wood imported in long poles from the tropical climates. It is, we believe, the produce of a species of *areca*, or Cabbage palm. It is the hardest, most lasting, and elastic wood known; and much used by coachmakers for the shafts of carriages, where elasticity and strength are desired to be combined.

LANCET, an instrument well known in surgery, used for blood-letting, and other purposes.

LAND, in general, signifies any kind of ground, but it is particularly applied to such as can be ploughed, or otherwise used for the advantage, support, and convenience of man.

The actual riches of a state are land and labour; where both these exist simultaneously in a state, and the latter, that is *population*, not in excess, such state cannot, without great mismanagement, be poor. In Great Britain, at the present moment, we have plenty of land; and it is, or may be made, very productive: for, notwithstanding the prophecies of Mr. Malthus, we believe that the land of this kingdom, under proper direction, will support, at least, four times the present number of inhabitants; and, therefore, we have no just cause for despair.

For the proper management of land, so as to make it most productive, see our article HUSBANDRY; and also BARLEY, BEANS, CARROTS, &c. &c., throughout our work.

Land-flooding. See IRRIGATION.

LANDSCAPE, a view or prospect of a country, extended as far as the eye can reach. The term landscape is also applied to that kind of gardening which consists in laying out sylvan and other rural scenery to the greatest advantage, so as to be productive of the most agreeable and pleasing emotions. It has, in this country particularly, arrived at considerable perfection, and is, unquestionably, one of the most enchanting arts. See GARDENING.

LANGUAGE, those articulate sounds of the human voice, by which we express our ideas, and their various relations.

Man, having no instinctive language, the origin of speech must be convention. Hence the cause of so many different languages in the world, and the difficulty, more or less, which different and distant nations have of understanding each other. But, however, it is no less extraordinary than true, that although different nations use different sounds, and combinations of sounds, to express their ideas, yet there is a very *general conformity* in the use of similar parts of speech, and families of words in almost all the languages with which we have an opportunity of becoming acquainted. In the acquisition of any language, therefore, it is this *general conformity* which ought, in the first instance, to be attended to, in order that the greatest proficiency, in the least time, might be made. We would premise here, that learning the *sounds* of a language, is an entirely distinct affair from that of learning a written language; and that a written language, having numerous examples in books, may be learnt with grammars, lexicons, &c., perhaps, even better, and more quickly, without a *vivâ voce* teacher; but oral language is unquestionably best taught by the living voice.

In learning a foreign language, whether living or dead, the absolute necessity of understanding, first, the structure and arrangement of our mother tongue, cannot be too strongly enforced. The terms of grammar, it is to be exceedingly lamented, appear, and indeed are, particularly to the young mind, difficult and unintelligible: and if they are so in our vernacular language, their difficulty and unintelligibility, when applied to foreign languages, must be considerably increased. The terms *tense, mood, optative, potential, genitive, dative, preterpluperfect, &c.*, although when once understood, are no longer stumbling-blocks, yet, till they are so, present to the young and uninformed, apparently, insurmountable difficulties. The same may be said of *substantive, adjective, verb, &c.* These difficulties should be, therefore, surmounted in our own language, before we attempt to acquire a foreign one; after which, there can be no doubt that the acquisition of any foreign language will be not only easy, but even agreeable and inviting. The absurdity of the usual method of teaching the Latin language cannot be made more manifest than this, that, at the commencement of our grammars, the learner is taught that *hic*, (the pronoun, in English *this*,) is an ARTICLE. Nothing can be more untrue: the Latin language has *no* article. The present mode of teaching that language is altogether one which the sooner it is departed from the better.

Having acquired a competent outline of the structure of our mother tongue, by being enabled to refer each word in a sentence to its proper family, or part of speech, and to define its bearing and relation, we may proceed to study a foreign language. And here it may not be amiss to observe that, most of the languages of Europe appear to have *two* distinct origins; those of the north, the Norwegian, the Swedish, the Danish, the German, and perhaps the Russian, with the Dutch, and the dialects of the British Isles, arose from one; the Greek, Latin, Italian, Spanish, Portuguese, and French from another. The structure of the first will be found much more like the structure of our own language than the last, and will be, of course, opportunities being the same, more readily acquired. At the same time it must be admitted that, from our great intercourse with France, that language, in structure, although not in sound, is not of difficult acquisition.

Many difficulties in foreign languages arise merely from the *order in which different nations think*: this subject is deserving also attention.

Having consigned the sounds of words to a living master, which is the best way in which they can be taught, we will now suppose our student of language about to learn a foreign one without any assistance, except books. He must, in the first place, obtain the best grammars and dictionaries of the language which are extant. After which, the following questions, and their answers, to be obtained from the grammar and the dictionary, will much facilitate the study.

Are there any articles in the language?—how many?—how are they formed?—if any, *learn them by heart.*

Are there any particular *particles* which are often used?—*get them by heart.*

How many genders?—by what means are they designated?—are there particular terminations for male and female, such as actor, actress, &c.?

How are the substantives formed?—by adding articles and prepositions, or by altering their terminations, or both?—are they known by particular terminations, as many are in English, which end in *tion, ness, ty, &c.*?

How is the plural number formed?—is there any difference between the masculine and feminine plural?

How are the adjectives formed?—how their genders distinguished?—how are the degrees of comparison expressed?—are the adjectives usually placed before or after the substantives to which they belong?—are any of the adjectives irregularly formed? As the irregular adjectives are not numerous, *learn them by heart.* Have the adjectives particular terminations by which they may be known?—do they vary their termination in the masculine, feminine, and neuter?—Do the singular and plural termination vary?—What are your cardinal numbers?—what are your ordinal numbers?—do they vary their terminations?—*learn both, to* 100, *by heart.*

How are the pronouns formed?—As they cannot be very numerous, *the principal should be learned by heart.*

How are the verbs formed?—how many conjugations of verbs are there?—is the pronoun expressed in the verb, or does it accompany it?—How are the passive verbs formed?—are there any irregular verbs? *Pay particular attention to them.* Are there any auxiliary verbs?—if any, *learn them by heart.* How is the verb *to be* formed?—how is the verb *to have* formed?—how is the verb *to will* formed?—how is the verb *to be able* formed?—*learn the conjugations of all these verbs by heart.* How is the verb known, by the first person singular of the present tense, or by the infinitive?—have the verbs in the first person singular, present tense, or infinitive, an uniformity of termination or do they vary?—what are the distinctive terminations in the different tenses and the different moods?

How are the active and passive participles formed?—do they vary their genders as adjectives?—do they vary their number, as substantives?—do they admit of the degrees of comparison?

How are the adverbs formed?—are they known by particular terminations?—do they admit of the degrees of comparison, and how?—which are the most usual adverbs? *learn them by heart.*

Which are the conjunctions?—*learn them by heart.*

Which are the prepositions?—*learn them by heart.*

Which are the interjections?—*learn them by heart.*

Are there any inversions or particular constructions in the syntax?—does the language admit of a great variety of different positions of the words without destroying the sense?—are there any idiomatic expressions?—*some of the most common should be got by heart.*

Is the poetical language different from the prosaic?

Read the grammar throughout often; consult it on every difficulty. Read over frequently the vocabularies at the end. Consult a good dictionary continually: begin to read easy books in the language, with and without translations: remember, by no means to depend upon translations. After you can read, and understand the language, will be the time to become *critical* in it, not before.

We have only to add to this method of acquiring language, that we know it is of great practical utility; and that the burthening the memory, in the first instance, with wearisome rules is not only disgusting but absurd. See **GRAMMAR.**

Lanner. See FALCON.

LANTERN, or LANTHORN, a contrivance to carry a candle in: it is usually made of tin, with some transparent matter, such as glass, horn, &c., set in compartments. They are some times composed almost entirely of tin plates, pierced with holes for the transmission of the light. Such are by far the best for stables, barns, &c.

LAPIS, the Latin word for stone. It was formerly applied to different substances in chemistry and mineralogy, such as *lapis calaminaris, lapis infernalis,* &c. See CALAMINE and INFERNAL STONE.

LAPWING, PEWIT, SAND-PIPER, RUFF, or *Tringa,* a genus of birds consisting of forty-eight species, inhabitants of Europe and America; a few of Asia; and seventeen common to our own country. The following are the principal species:

The *Pugnax,* or Ruff and Reeve: the bill and legs are rufous; three lateral tail feathers without spots; face with flesh-colour granulations. They are so variable in their colour, that two are seldom alike, but the long feathers of the neck resembling a ruff, sufficiently characterize the species. The ruffs, or males, fight with great obstinacy for the females, or reeves, whence their specific name. Eggs four, white, with rusty spots. Inhabits Europe; found frequently in our own country, in the fens, appearing early in the spring, and disappearing at Michaelmas. Twelve inches long. The reeves are less variable in their plumage, and smaller than the ruffs. They are caught in the fens by nets; when fattened, they are dressed with their intestines, and their whole contents, like woodcocks.

The *Vanellus,* or Lapwing, bastard plover, or pewit, with red legs, crest pendent, and breast black, inhabits the marshes and moist heaths of Europe. They appear in this country in the month of March, and are distinguished by the monotonous sounds of *pee-weet,* which they continually utter. About twelve inches long. Feeds chiefly on earth worms, which it artfully obtains by beating the ground about their holes. Is gregarious, except during the breeding season. Eggs four, dirty olive, spotted with black. Flesh delicious.

The *Gambetta,* or Gambet, has the bill and legs red; body variegated with pale yellow and cinereous, beneath white. Inhabits Europe and America; twelve inches long.

The *Interpres,* Turnstone, or Sea dotterel, has red legs, body black, varied with white and ferruginous; breast and belly white. Bill of the male black; colour of the female more dusky. Inhabits the sea-coasts of Europe and America; nine inches long; feeds on worms, turning over stones to look for them; eggs four, olive spotted with black. Three other varieties; one inhabiting Scotland and North America; two Cayenne.

The *Lobata,* or Grey phalarope, inhabits Europe, Asia, and America, rarely England: size of the common purre; one other variety. In stormy weather gregarious on lakes.

The *Ochropus,* or Green sand-piper, is ten inches long; inhabits Europe and America; solitary, and smells of musk; indigenous to England. Another variety, with cinereous back and wings, and pale whitish spots.

The *Hypoleucos,* or Common sand-piper, has the body cinereous, with black stripes, beneath white; inhabits Europe and America; common to our own country; seven and a half inches long; wags the tail; eggs four or five. dirty yellow, with pale spots in banks.

The *Canutus,* or Knot, has the body above cinereous, beneath white; inhabits England, Europe generally, and America; nine inches long; eggs flesh-colour, with crowded orange red spots; flesh delicious.

The *Cinclus*, Sanderling, Puerr, or Stint. Bill and legs black; body and rump grey and brown; a second variety with brown legs. The breast and belly white in both. Inhabits England, Europe generally, and America; seven and a half inches long; flesh eatable. These birds frequent the mouths of our salt-water rivers, in immense flocks during the spring and winter season, and are generally seen in the greatest numbers at, or about high water, particularly during the spring tides.

LARCENY, or THEFT, is distinguished by the law into two sorts. When goods are stolen above the value of twelve pence, it is called grand larceny; when under that value, petit larceny. They are now both generally considered species of felony. See FELONY.

Larch. See PINE.

Lard. See SWINE.

LARK, or *Alauda*, a genus of birds, comprehending thirty species, or more, of which the following are the chief:

The *Arvensis*, Sky-lark, or Field-lark, inhabits Europe, Asia, and Africa; feeds on fruit and insects, sings sweetly, soaring in the air, increasing the volume of its note as it ascends; assembles in vast flocks in winter, when it becomes very fat; builds on the ground in grass or corn: lays four or five greenish white eggs, with dusky confluent spots. This, and the wood-lark, are the only birds which sing as they fly. Body above varied, with blackish, reddish, grey, and whitish; beneath reddish white; bill and legs black; throat spotted with black. Four or five varieties. Flesh good.

The *Pratensis*, or Tit-lark, inhabits Europe in low grounds; five and a half inches long; has a fine note, and sings sitting in trees or on the ground. Bill black: body beneath white; breast ochre yellow, with oblong black spots; legs yellowish.

The *Arborea*, or Wood-lark, inhabits Europe and Siberia; less than the Sky-lark; sits on trees and whistles like a blackbird; sings also in the night, and while flying; builds on the ground; eggs dusky, with deep brown blotches. Head surrounded with a white ring, or fillet; body varied like the *arvensis*; legs flesh-colour.

The *Obscura*, or Rock-lark, inhabits rocky places in England; seven and a quarter inches long; solitary, and sings little; note like the chirp of the grasshopper.

The *Cristata*, or Crested-lark, inhabits Europe; six and three quarters inches long; like the bullfinch, learns with ease to repeat tunes played or sung to it; in doing which it articulates every note distinctly, and entirely drops its native warble. Bill brown, crest darker than the body; body cinereous; breast and belly white, with a yellow band; tail feathers black; head crested; legs black.

LARK-SPUR, or *Delphinium*, a genus of plants, consisting of fourteen species, of which a few possess only one capsule, but the majority three. These are chiefly found wild in Europe; three or four of which are cultivated in our gardens. Two or three of this genus are perennial. Those most worthy of notice, are:

The *Consolida*, or common lark-spur, found in our own fields; the petals are easily doubled by propagation, and are in colour usually blue, red, pink, or violet. They are propagated by seeds.

The *Peregrinum*, is a native of the South of Europe.

The *Staphisagria*, or Staves-acre, is indigenous to the South of Europe. It is a biennial handsome plant, yielding purplish flowers from June to August. The seeds are rough, brown, and triangular. They are emetic and cathartic, but their operation is so violent, that they are never internally administered. They are chiefly employed in powder, mixed with hair powder, for destroying those troublesome animals which infest the hair of the human head.

From some late experiments it appears, that a peculiar alkali exists in the seeds of staves-acre, to which the French chemists, who discovered it, have given the name of *Delphine*. It is a fine white powder, inodorous, but of an extremely acrimonious taste. Thrown on burning coals it fuses, and burns with a white thick smoke of a particular odour, and leaves no residuum. It is slightly soluble in water; but alcohol and sulphuric ether dissolve it entirely. It forms soluble salts with many of the acids; their taste is bitter and acrid.

LARVA, or LARVE, in natural history, a name given to insects in the caterpillar, or worm state.

LARYNX, in anatomy, a cartilaginous cavity situated behind the tongue, and lined with an exquisitely sensible membrane. It forms the upper extremity of the trachea, or wind-pipe. The principal uses of the larynx are to produce the voice, and to serve with the rest of the trachea, the purposes of respiration. See EPIGLOTTIS, GLOTTIS, and TRACHEA.

LAST, a certain measure of fish, corn, wool, leather, &c. A last of cod fish, white herrings, meal, and ashes for soap, is twelve barrels; of corn, or rape seed, ten quarters; of gunpowder, twenty-four barrels; of red herrings, twenty cades, or barrels, of 500 each; of hides, twelve dozen; of leather twenty dickers, of ten hides each; of pitch and tar, fourteen barrels; of wool twelve sacks; of stock fish one thousand; of flax or feathers 1700lbs.

LATH, in building, a long, thin, and narrow slip of wood, nailed to the rafters of a roof, or ceiling, in order to sustain the covering. Laths are made of different kinds of wood, chiefly oak, ash, and deal. Oak laths are also of two kinds: sap and heart. Deal laths are also of two kinds, those cleft for the purpose of plastering, and those sawn for tiling. Laths are also distinguished according to their lengths:—five feet, four feet, and three feet. They are sold by the bundle, containing one hundred; one hundred, however, of three feet laths, should contain 140; of four feet 120; and of five feet 100, or five score. In such case, the different lengths are all charged at the same price. Laths are usually made by first cleaving the timber out into proper lengths, with wedges by the felt grain; that is, the grain which is seen to run round in rings at the end of a tree. They are afterwards cleft into their proper thickness with the chit, by the quarter grain, which runs in a straight line towards the pith.

Lathe. See TURNING.

LATIN, one of the learned languages, and that which was formerly spoken by the Romans.

The Latin is more figurative than the English, less pliant than the French, less copious than the Greek, less pompous than the Spanish, and less delicate than the Italian, but closer, and more nervous than either of them. Although generally considered a dead language, it is still that which is most commonly used by learned men.

A knowledge of the Latin, as well as the Greek language, has its uses; but we very much doubt, whether the value placed upon ancient learning be not greatly over-rated. As it is commonly taught, much valuable time is unquestionably consumed, which might be very often better employed. It is certainly, however, very possible to simplify, to shorten, and to make more agreeable, the study of the learned languages; but such simplification, we fear, it is not in the disposition of our academies to adopt. See GRAMMAR, and LANGUAGE.

LATITUDE, in geography or navigation, the distance of a place from the equator; hence the latitude is always either north or south: thus London, being on the north side of the equator, is said to be, as it is, in 51° 31′ of north latitude.

LATTEN, or LATTIN, tinned iron sheets, commonly called tin plate. See TIN PLATE.

LAUDANUM, a well known preparation of opium. See OPIUM.

LAUGHTER, a sudden and convulsive expression of mirth. Moderate, and occasional laughter, is very beneficial to health, contributing not only to the circulation of the blood, but opeating advantageously also on the digestive organs. Laughter is frequently n accompaniment of cheerfulness, than which few affections of the mind contribute more to our social and physical well being: their powers over us may be known by the fact, that they are both exceedingly, and generally invountarily, contagious.

LAUNCE, Sea Launce, Sand Launce, or *Ammodytes*, a genus of ish, consisting of only one known species, the *tobianus*, which is from nine to twelve inches long; its head is compressed, narrower than the body, upper lip doubled in; lower jaw narrow, pointed; teeth very sharp; body long, square; the sides rounded; colour black, blue, beautifully varied with green; belly and sides silvery. It buries itself on the recess of the tides, a foot deep in the sand, and in fine weather rolls it [illegible] up, and lifts its nose just above the sand; the prey of other rapacious fishes. The flesh is good, but it is commonly used for bait.

LAUREL, a name applied to several trees and shrubs of different genera; an account of several laurels will be found under our article Bay, which see.

Laurel, Alexandrian. See Butcher's Broom.

LAUREL, the American dwarf, American ivy-tree, or *Kalmia*, a genus of plants, consisting of four species, as follow: the *latifolia*, or Broad-leaved kalmia, a beautiful shrub, rising from six to sometimes ten or twelve feet high, the flowers are white stained with purplish red. A native of Carolina and Virginia. The *angustifolia*, or Narrow-leaved kalmia, with flowers of a pale blue tint, rises to nearly sixteen feet; a native also of North America; the honey secreted from this plant is poisonous. The *hirsuta*, or Bristly kalmia, with hairy leaves, is one flowered, and also a native of Carolina. The *glauca*, or Glaucous kalmia, is a native of Newfoundland.

LAUREL, the Cherry, or *Prunus lauro-cerasus*, an evergreen tree or shrub, with large, thick, oblong, glossy, leaves, pointed at both ends, and slightly indented: towards the tops of the branches, come forth pentapetalous flowers in five-leaved cups, followed by clusters of berries, like cherries or damsons. It is cultivated in gardens, flowers in May, and ripens its fruit in August and September.

The leaves of the cherry-laurel have a bitter styptic taste, accompanied with a flavour resembling that of bitter almonds, or other kernels of the drupaceous fruits; the flowers also manifest a similar flavour. The powdered leaves applied to the nostrils, excite sneezing, though not so strongly as tobacco. The kernel-like flavour which these leaves impart, being generally esteemed grateful, has sometimes induced them to be employed for culinary purposes, and especially custards, puddings, &c.; and as the proportion of this sapid matter of the leaf, to the quantity of the milk, is commonly inconsiderable, bad effects have seldom ensued. But as the poisonous quality of this laurel is now indubitably proved, the public ought to be cautioned against its internal use, The oil, extract, and water, of the leaves of this tree, when several times distilled, are also exceedingly poisonous. The poison consists of Prussic acid. See that article, under which is detailed the mode of treatment of those who have been poisoned by cherry-laurel, &c. See also, Laurel-Water.

Laurel, Portugal. See Plum.

LAUREL, the Sea-side, or *Phyllanthus*, a genus of plants containing eleven species, natives of the East and West Indies. The following are cultivated: the *niruri*, or Annual phyllanthus; the *grandiflora*, or Great-leaved phyllanthus; and the *emblica*, or Shrubby phyllanthus. These require artificial heat, and rise from twelve to fourteen feet high.

LAUREL-WATER, a water distilled from the cherry-laurel, and now known as a sudden and energetic poison. We merely mention this article to guard our readers against the use of it. It has the smell of bitter almonds, or peach kernel: indeed, a water distilled from these and similar kernels, is also poisonous. Persons who drink this water, very often die so suddenly, that no relief can possibly be administered. The most striking case of poison by it is that of Sir Theodosius Boughton, in Warwickshire, in 1780: it was administered to him by his brother-in-law, and for doing which he was condemned and executed. For the mode of treatment of those who have taken laurel-water, see PRUSSIC ACID.

Laurustinus. See GUELDER-ROSE.

LAVA, in mineralogy, a genus of argillaceous earth, consisting of alumine with a large portion of silex and oxide of iron, and frequently a little carbonate of lime, and carbonate of magnesia; generally of a dull colour, becoming hoary when scraped, breaking into indeterminate fragments, and mouldering into argil in the air: produced by the internal fires of volcanic mountains, from which it is thrown out; and melting into a black glass. Six different species have been observed; the following are the chief: The *compacta*, or Compact lava, contains often hornblend, white garnet, olivin, calcareous spar, mica, schorl, &c.

The *pumex*, or Pumice-stone, a well known article, of which there are several varieties, used for the purpose of burnishing and polishing metals, &c. The colour is either grey, greyish-white, brown, or reddish, rarely yellow; it is more or less porous, light, rough; fibres generally parallel, and have a silky lustre; does not effervesce with acids; melts into a white enamel.

LAVENDER, or *Lavandula*, a genus of plants, comprehending eight species, chiefly of the south of Europe. The following are the chief:

The *Spica*, Spike, or Common lavender, with sessile, lance-linear leaves, and blue flowers, is a perennial shrub, native of the south of Europe, but commonly cultivated in our gardens, and flowering from June to September. The taste of the flowers is bitter, warm, and somewhat pungent; the leaves are weaker, and less grateful. The essential oil is of bright yellow colour, of a very pungent taste, and possesses, if carefully distilled, the fragrance of the lavender in perfection. There are two other varieties of this species, but they are more rare, and do not differ in their sensible and medical qualities. The flowers are cut in dry weather, when they begin to blow.

Lavender is stimulant and tonic. Besides the essential oil, which is given from one drop to five, on a lump of sugar, in hysteria, and nervous head-ach, the London College orders a spirit of lavender, commonly called lavender-water, and a compound spirit of lavender, to be made thus:

Spirit of lavender: Take of fresh lavender flowers two pounds; rectified spirit of wine, a gallon; water sufficient to prevent burning. Macerate for twenty-four hours; then distil off a gallon by a gentle heat.

Compound spirit of lavender: Take of spirit of lavender, three pints; of spirit of rosemary, one pint; cinnamon-bark bruised, nutmegs bruised, of each half an ounce; red sander's-wood chipped, one ounce. Macerate for fourteen days, and strain.

The following forms will, we believe, be found superior to the preceding, and they are, certainly, more within the province of the domestic preparer of medicine and perfume.

Lavender Water: Take of oil of lavender, half an ounce: of oil of rosemary one scruple; of camphor one scruple; of rectified spirit of wine two pints; of water one pint; of essence of ambergris one drachm. Dissolve the oil and camphor in the rectified spirit of wine, then add the essence of ambergris, and lastly the water. Should it not be fine, a drachm or two of common alum, rubbed with a small portion of the water in a glass or marble mortar, and the whole well shaken together, will cause it to become fine in a few hours.

A *compound spirit of lavender* may be made of the above lavender water by adding to it nutmeg, cinnamon, and red sanders-wood, in the same proportion as those ordered in the preceding directions of the London College. But if it be desired of a deep red colour, it should be macerated for a much longer time than fourteen days: a month is not too much.

In the preparations of these medicines, the principal thing necessary is to obtain good oil of lavender. Much of what is sold in the shops is of a very indifferent smell, and frequently adulterated with oil of rosemary. Foreign oil of lavender is not so good as that distilled in England. We have stated, under the article BAY, the method of detecting the adulteration of essential oils, to which we refer.

Compound spirit of lavender is a very grateful cordial, and stimulant; and is particularly useful in the languors and fainting to which the female sex are liable; and is often usefully added to tonic and stomachic infusions. The dose is from thirty drops to two drachms, either dropped on sugar, given in water, the camphor mixture, or any other convenient vehicle.

Essence of lavender is made by dissolving two ounces of oil of lavender in one pint of rectified spirit of wine.

The *Stœchas*, or French lavender, has downy sessile, linear leaves; a native of the south of Europe.

The *Viridis*, with sessile, linear, wrinkled, and villous leaves, is a native of Madeira.

The *Dentata*, is a native of Spain.

The first species is propagated by cuttings or slips, the best season for which is March: they succeed best upon the most barren and rocky soil, in which they will endure the severest winters. The second sort is a biennial plant, the seeds of which may be sown every spring, on borders or beds of light fresh earth, and afterwards transplanted to other places in the garden, or into pots. The third and fourth species are shrubby plants; the third is managed like the first; the fourth being tenderer, must be sowed on a moderate hotbed, in the spring. They may be preserved through the winter in a good green-house, flowering through most part of the season, and producing at the same time seed.

LAVENDER-COTTON, or *Santolina*, a genus of plants, comprising eight species. The following are the best known:

The *Chamæcyparissus*, or Common lavender cotton, with hoary leaves, rises nearly three feet, with a shrubby stalk; the flower is sulphur-coloured; a native of Spain and Italy; flowers from July to September. Several varieties: the hoary, the creeping, and the dark-green. The *rosmarinifolia*, or Rosemary-leaved lavender-cotton with large sessile, globular pale sulphur-coloured flowers, is a native of Spain, and flowers from July to September. The *Alpina*, or Alpine lavender-cotton, is a native of Tuscany, and flowers in June. The *anthemoides*, or Chamomile-leaved lavender-cotton, has sulphur-coloured flowers, a native of Tuscany, and blossoming in June. These may all be raised from slips or cuttings in the spring. Their medical virtues are of no importance.

LAVENDER, THE SEA, THRIFT, or *Statice*, a genus of plants comprehending thirty-seven species, chiefly natives of Europe and the Levant; many of them found on the sea-coast: three on the coast of our own country, Some of the species are called cushions, and are often used as edgings, in flower-gardens. The following are cultivated: The *armeria*, thrift, or sea-gilliflower; and the *limonium* sea-thistle, or sea-lavender, both found on our shores; the *cordata*, or heart-leaved, the *reticulata*, or matted, the *echioides*, or rough-leaved, the *speciosa*, or plantain-leaved, the *pectinata*, or triangular-stalked, the *suffruticosa*, or narrow-leaved, the *monopetala*, or broad-leaved shrubby, the *ferulacea*, or cut-leaved, the *tartarica*, or tartarian, and the *sinuata*, or scollop-leaved sea-lavender.

All these may be increased by parting or slipping the roots. They may be also raised from seeds: but the seeds for the foreign sorts should be obtained from abroad.

The roots of the *limonium*, or Sea-thrift, have been used for tanning leather.

LAW, in its most general and comprehensive sense, signifies a rule of action, and is applied indiscriminately to all kinds of actions whether animate or inanimate. In its more confined sense law denotes that assemblage of rules which society has formed either by long custom or by specific and written statutes, for the regulation of the conduct of men. The former is called in this country, the *common law*, the latter the *statute law*. The absolute necessity of laws to regulate the conduct of man in a state of society, is so evident, that no argument can be here necessary to enforce its truth. But, although the necessity of laws for the regulation of society is incontrovertible, it is, nevertheless, equally true, that all general laws ought to be as few and as simple as possible, and expressed in such language that the lowest member of the commonwealth may be enabled at once to comprehend them. When the laws of any state are numerous, voluminous, continually augmenting, and difficult to be understood by plain unlettered men, we may be quite sure that society, in that state, is exceedingly artificial, and that it contains within itself the seeds of disunion and dissolution. Many causes may retard the progress of its ultimate decay; but a state having such laws, and adding to their confusion by an annual increase of them, and of the persons necessary to expound them, so that a simple-minded man cannot, even in many every-day concerns, act without a lawyer at his elbow, is not that state which can be held up as a pattern; but one over which wisdom must lament, and in which common sense will be often confounded.

In the making of laws, it should never be forgotten, that, so multitudinous are the motives for human conduct, it is often very difficult, by any general law, to meet particular cases; that laws ought to be so framed, that every individual infringement of them should, if possible, be tried upon its own individual merits; and that an interference with individual conduct is only justifiable when that conduct trenches upon the rights of others. In legislation, therefore, we should always remember, that all law is at best an evil; that the fewer, and more simple, the laws, the better; and that, wherever the laws are numerous, intricate, and perplexing, there the greatest injustice will be often committed, and under the worst form, the form or sanction of the law itself, than which nothing can be more preposterous and absurd.

The best and strongest of all argument for this view of the law is, that its simplicity more readily, and certainly, commands obedience; a consideration in the making of laws of no trifling kind: for whenever it is obscure and unintelligible, it will be very often evaded; its obscurity, and unintelligibility, furnishing the most common, and indeed, best pretext for such evasion.

The greatest misfortune, however, in law, besides the number and structure of the laws themselves, is that vicious attention to *precedent*, which too often sets feeling, justice, and common sense at defiance. The propriety of any thing's being done, or not being done, must depend only upon the present fitness of things, and not upon whether such a thing was done one hundred years ago. In law, as well as other things, if law be justice, and justice it ought to be, that which it is right to do, ought to be done, although ten thousand precedents decide to the contrary. Precedents are then only good, when founded in reason and justice. But that which it might have been perfectly just to do one hundred years ago, might be now the most wicked and unjust proceeding which can be conceived.

In conclusion, we have to observe, that above one hundred acts of Parliament have been annually added to the statute book of this country for many years past, whether with improvement to our jurisprudence and our morals, must be left for others to determine. See ATTORNEY, BARRISTER, COMMON LAW, and PUNISHMENT.

Lawyer, See ATTORNEY, and BARRISTER.

LAX, a looseness. See DIARRHŒA.

LAXATIVES, medicines slightly

purgative. Most of our ripe summer fruits are laxative; so also are castor oil, manna, &c.

LAYERS, in horticulture, certain shoots or branches of shrubs, flowers, &c., which are laid in the earth, more or less deep, according to the nature of the plant, the branch being partly divided with a knife from the parent stock, then covered with earth, and watered till it has taken root. If the layer does not retain the position in which it is placed, it should be kept in it by a wooden hook. The best season for laying evergreens, is towards the end of August; for deciduous trees, in the beginning of February: when the branch has taken root, it may be separated from the parent stock.

LEAD, or *Plumbum*, a metal, of a bluish white tint, melting at 600°, and by the united action of heat and air readily converted into an oxide. Its specific gravity is 11,35. It is very malleable, readily extending under the hammer into very thin leaves, but its tenacity is less than any other metal: a wire one-tenth of an inch in diameter, will break with a weight of three pounds. It is soluble in all the acids, and gives the solution a sweetish taste. Lead in almost every form and combination, is more or less poisonous.

The natural compounds of this metal are very numerous: twenty-three species have been described: *native lead*, said to be found in Monmouthshire, Poland, and Silesia; *earthy lead-ore*, either grey, white, red, or yellow, powdery, without lustre; yields from 60 to 80 per cent. of lead, found in Great Britain, Germany, Saxony, &c.; *micaceous* lead ore, in plates of a silver colour and lustre, found in the Hartz Forest;—*white opake lead-ore*, indurated without lustre, found with the last;—*glass of lead*, semitransparent, brittle, of a glassy texture, and common form; found in Somersetshire, Scotland, France, Saxony, Siberia, Hungary, &c.; colour white, grey, or yellowish green;—*white carbonate of lead*, generally in the form of crystals; found in various parts of Great Britain and Ireland, and other parts of Europe; — *murio-carbonate of lead*, transparent, of a glassy lustre, in the form of crystals; found in Derbyshire, and the Hartz, specific gravity 6,065.—*Yellow lead-ore*, or molybdate of lead, in yellow crystals; found in Scotland, Carinthia, &c. &c., specific gravity 5·486; *phosphate of lead*, greenish, reducible to a yellow powder; found in Great Britain, New Spain, Siberia, &c., specific gravity 6,270 to 6,560.—*Brown lead-ore*, found on the Carpathian mountains; contains 36 per cent. of lead, and a little silver and gold.—*Black lead-ore*, soiling the fingers, found at Freyburg and Brittany.—*Arsenico-phosphate of lead*, greenish yellow, without lustre; found in France.—*Double lead-ore*, consists of the arsenical and sulphuric acids united with lead.—*Sulphate of lead*, whitish, without lustre; found in Scotland, Anglesea, and Andalusia; specific gravity 6,300.—*Horny lead-ore*, white, without metallic lustre; found in Bohemia.—*Compact galena*, of metallic lustre, easily melting, with sulphureous vapour and flame, leaving a bead of lead without any mixture of silver: found in England, Scotland, Norway, &c., colour lead-grey, with a bright streak; specific gravity 7,444: merely lead combined with sulphur.—*Galena* lead, glance, or sulphuret of lead; of the colour and lustre of lead, breaking into cubical fragments, melting with sulphureous flame and vapours, and, when the lead is reduced to a glassy oxide, leaving a bead of silver. Another variety of an indigo, blue, and lead grey; found in Great Britain and Siberia.—*Dasaltic lead-ore*, with metallic lustre; found in Sweden.—*Antimonial lead-ore*, of the colour and lustre of lead; found in Siberia, Sweden, Hungary, &c.; besides lead and sulphur, it contains antimony and silver.—*Klaproth lead-ore*, consisting of lead, copper, antimony, iron, sulphur, and silver.—*Cornish lead-ore*, combined with lead, antimony, copper, sulphur, and iron.—*Subandic lead-ore*, consisting of lead, antimony, and arsenic.

The most important of these is the sulphuret, or galena, whence the pure metal is chiefly procured. When first brought from the mine, this ore is cleared from its impurities, and a ton, or more, is spread upon the floor of a common reverberatory furnace, and by means of a pit-coal flame, it is soon brought to a red heat. In this state it is occasionally stirred with iron rakes, to expose fresh surfaces to the action of the flame, and facilitate the separation of the sulphur. In a short time the mass begins to acquire a pasty consistence; upon which the heat is lowered, and the ore is kept at a dull red, till the sulphur is nearly all got rid of; the fire being then increased, the ore is brought to a perfect fusion, and visibly consists of two fluids; the lower is the lead; the upper various impurities. In this state the fire is damped, a few spade-fulls of quick lime are thrown into the mass, when the drossy parts become solid, and are raked to the side of the furnace. The tap hole is then opened, and the lead runs into moulds, forming masses called pigs, weighing about 60lbs. each.

When lead is melted in free exposure to air, it becomes almost immediately covered with a wrinkled pellicle, of a dirty grey colour; and if this be skimmed off, others form in succession, till the whole metal is changed into a yellowish grey oxide. This oxide, by a further continuance of heat and frequent stirring, passes through various shades of greenish yellow to a deep dun yellow, owing to a successive absorption of oxygen; the oxydation being further continued, the article known in commerce under the name of litharge is produced; a still higher degree of oxydation is that when it becomes red.

There are, therefore, three oxides of lead: Dr. Thompson mentions four. The *protoxide*, is the basis of the salts: it may be obtained by heating the nitrate of lead to redness in a close vessel. It is insipid, insoluble in water, and of a pale yellow colour. It is known in commerce under the name of *massicot*; or, when mixed with a portion of red oxide, as obtained by calcining lead upon a large scale, it is called *litharge*. If the protoxide be exposed to heat and oxygen, it gradually acquires a bright red colour, and is known under the name of minium, *deutoxide* of lead, or red lead. The *peroxide* of lead is an insoluble brown substance. Red lead affords on analysis, 97 parts of lead, and 11·25 of oxygen; it may, therefore, be regarded as a definite compound of the protoxide and peroxide. But it cannot be made with any certainty in the small way, by mere calcination in the air, the colour never rising higher than a dun yellow: it is only produced in manufactories in the large way, by frequent stirring.

Patent yellow, which is made by fusing common salt, or a solution of it, and litharge, in crucibles, exposed to an intense heat, appears to be a compound of oxide and chloride of lead.

White lead, cerusse, or carbonate of lead, is usually prepared in the large way, by exposing sheet lead to the action of the vapour of vinegar.

Lead is of great use in the arts. In its metallic state it is used for the roofs and gutters of houses, for pipes, cisterns, &c. &c. Its oxides are also used extensively as pigments. Their peculiar quality of dissolving in the expressed oils, rendering them very proper for such purposes. See Colour Making. Nor does it appear that any succedaneum for their use has been found, although the Society of Arts have offered large premiums for the discovery of an innoxious substitute.

The oxides of lead are also frequently used externally for various diseases.

Acetate of lead, or sugar of lead, called by the London College super-acetate of lead, is formed either by digesting the carbonate of lead in distilled vinegar, or in the acetic, or pyroligneous acid. Its taste is sweet and astringent. It is occasionally used in medicine, but more frequently as a drying ingredient in paints; it is also used by dyers and calico-printers.

Acetate of lead, taken internally, is a very powerful astringent and sedative. It must, however, be given with great caution; and is admissible only in cases of very urgent danger, as in violent pulmonary or intestinal hæmorrhages, in restraining which it has a very powerful influence. The dose, given internally, should not exceed half a grain every six or eight hours. It may be made into a pill with crumb of bread, and a proportion of opium, according to circumstances; but perhaps the domestic prescriber would act most wisely by not meddling with this powerful edge tool.

As a collyrium, or lotion, from ten grains to one scruple may be dissolved in half a pint of distilled water.

The following preparations of lead are ordered by the London College:

Solution of sub-acetate of lead, commonly called *Goulard's Extract*. Take of semi-vitreous oxide of lead, (litharge) two pounds; of acetic acid (vinegar,) a gallon; mix, and boil down to six pints, constantly stirring; then set it by, that the feculencies may subside, and strain. But a better way, because more economical, is to filter it through blotting paper, and afterwards to press out the remaining solution:

This solution is used only externally, and when diluted with water, forms a very useful cooling application to phlegmonous inflammations, and burns. The proportion may be one fluidrachm to a pint of water: but it is sometimes used much stronger. Care should be taken that the water used is either distilled or soft water; spring water should not be used, as it generally contains matters which decompose the medicine.

For *Compound lead cerate*, see CERATE.

For *Lead plaster*, and other plasters prepared with lead, see PLASTERS.

Lead has no action on the animal system in its pure metallic state: but when oxidized, or in combination with acids, it produces very deleterious effects. Hence metallic lead, taken into the stomach, may prove a poison, from its meeting with acids in the primæ viæ; and liquors which are apt to become in any degree acidulous, if kept in leaden cisterns, may, from the same cause, be productive of much danger to those who drink them. But white-lead, its preparations in oil, the other oxides, and the solutions of lead in various acids, are the more common causes of the mischiefs arising from this metal.

It has been, however, proved, that utensils made with an alloy of equal parts of tin and lead, may be used without danger; neither vinegar nor lemon juice attack this alloy, except when boiled in it. It is very dangerous to drink water preserved in vessels of lead exposed to the air; and, indeed, serious diseases have been known to arise from the use of rain water which has been transmitted by pipes of lead; wine of a bad quality, which has had any of the preparations of lead mixed with it, with the view of rendering it less acid, is still more dangerous; and sugar of lead, which is sometimes added to cider, to give it a sweetish flavour, occasions the same symptoms as the adulterated wine. From the frequent occurrence of the disease caused thereby in Devonshire, it is called the *Devonshire colic.* See below.

When, therefore, a large dose of a soluble preparation of either sugar of lead, extract of lead, or goulard water, cerusse, massicot, litharge, or red-lead has been taken into the stomach, (the effects of which are not to be confounded with those arising from the vapours of lead) there arises a sweet, astringent, metallic taste, constriction of the throat, pain in the stomach, desire to vomit, or vomiting, and that often mixed with blood; in short, all the symptoms as described under the article CORROSIVE SUBLIMATE. If in place of taking a large dose of lead, water or wine, containing but a small portion, has been swallowed, no immediate inconvenience is felt; but if the practice of drinking such liquors be continued, there eventually arises a disease similar to the colic of painters. See below.

We have ascertained, by experiment, that Glauber's salts, Epsom salts, and hard water, that is, water holding in solution sulphate of lime, are the best to counteract the effects of the preparations of lead. The treatment in this case should be precisely the same as that recommended for the salts of Barytes. See **Barytes.**

Painters, plumbers, glaziers, the preparers of colours, and, in general, all workmen who handle the metal frequently, or are exposed to its emanations, are subject to a disease known under the name of *lead colic*, or *colic of painters:* the *colic of Poictou, dry belly-ach*, and *Devonshire colic*, are precisely of the same nature and originate from the same poison, lead.

For the most part the disease commences by pain in the bowels, which is not acute, nor of long duration; these pains do not fail to return, and then they are insupportable; the mouth is dry; there is a desire to vomit, and the vomiting lasts for several days; the matter vomited is very bitter, of a green or black colour; the evacuations are very difficult, and the excrements are yellow, hard, round, and similar to those of sheep. Sometimes, on the contrary, there is a great looseness; the belly sinks, especially towards the navel, and this sinking in of the navel is so much the more observable as the pain is intense. The pain is frequently diminished by gradually increased pressure of the belly; fever is seldom or ever present, and it is very rare that the patient complains of pain in the head, or giddiness. In some cases, though rarely, the symptoms above detailed manifest themselves with the greatest rapidity. The extremities become paralytic; and sometimes the pain of the bowels, and the palsy of the extremities, alternate for a long time. It is always a dangerous, and sometimes a fatal disease. The following promises the most successful mode of cure.

Let there be administered to the patient, on the first day of the attack, a clyster composed thus: Boil four ounces of senna leaves in a pint of water, and to the strained liquor add half an ounce of Glauber's salts, and four ounces of antimonial wine. This should be administered in the morning; and in the course of the day the following purging potion: Boil two ounces of the bruised pods of cassia fistula (see **Cassia**,) in a quart of water, for fifteen minutes, and to the strained liquor add one ounce of Epsom salts, and three grains of emetic tartar; and, if the disease be very violent, one ounce of syrup of buckthorn, and one drachm of confection of scammony. In the evening the following anodyne clyster should be administered. Six ounces of olive oil, twelve ounces of red wine, and one drachm of confection of opium.

On the second day, early in the morning, three grains of emetic tartar should be given for an emetic; repeat the same dose an hour after; some warm water and honey ought to be given to encourage vomiting. In the course of the day, after the vomiting has ceased, the following sudorific mixture should be drunk at intervals: Take of guaiacum shavings, sarsaparilla, and China-root, of each one ounce; water three quarts; boil the ingredients in the water till it is reduced to two quarts; to the strained liquor add half an ounce of liquorice-root sliced, and one ounce of sassafras chips. The decoction is then to be slightly boiled again. In the evening the clyster and opiate as on the first day.

On the third day, to a quart of the sudorific mixture add one ounce of senna leaves, and boil them for a few minutes. This is to be divided into four doses, and taken at intervals of three-quarters of an hour, beginning early in the morning. During the rest of the day give the simple sudorific mixture, and at night the anodyne glyster, and the opiate, as on the first day.

On the fourth day, in the morning early, give the following purgative draught: To a glass of decoction of senna, (prepared by boiling a quarter of an ounce of the leaves, in five ounces of water, till reduced to three ounces) add half an ounce of Glauber's salts, one drachm of powdered jalap, and one ounce of syrup of buckthorn. In the course of the day give the sudorific mixture, and at night repeat the anodyne glyster and opiate.

In the morning of the fifth day, let the slight purgative mixture of the third day, be given at four different times; and at night repeat the anodyne clyster and opiate.

On the sixth day let the same treatment be adopted as on the fourth. If there be no copious evacuations give the following purgative boluses: Take of scammony and jalap, of each ten grains; of gamboge twelve grains; and one drachm and a half of confection of scammony. Mix, and divide into twelve doses; one of these to be given every two hours, and during the intervals the sudorific mixture.

If the mixtures prescribed are vomited, give the emetic in a clyster, prepared by mixing one grain of emetic tartar with a pint of water.

It is very rare, after such treatment, that the patient fails of being cured.

Throughout this complaint the patient's diet should consist of nourishing broths, panada, and gruel, or similar light dishes.

In slight cases, common alum taken to the extent of 15 or 20 grains every fourth, fifth, or sixth hour, has afforded relief. Balsam of Peru, in doses of 40 drops, to be taken two or three times a day, has also been recommended.

Many painters and glaziers who are subject to the complaint, rely on burnt gin, which, it is said, is often very effectual.

LEAD-WORT, or *Plumbago*, a genus of plants, consisting of seven species, natives of the south of Europe, the Cape, India, and America. The following are cultivated:—The *Europæa*, or European lead-wort, has a stiff, slender, channeled stem, with lanceolate rough leaves clasping it; corol lead-colour. The leaves are said to cure the tooth-ach; it is a native of the south of Europe.—The *Zeylanica*, or Ceylon lead-wort, a native of India;—the *rosea*, or Rose lead-wort, a shrubby Indian plant; the *scandens*, or climbing lead-wort, has terminal flowers with a flexuous climbing stem. The first sort is increased by parting the roots; the others should be raised from seeds sown in pots in the spring, and plunged into a hot-bed.

LEAF, in botany, the chief organ of life in a vegetable, transpiring and attracting air and moisture, as the lungs do in animals, and affording shade to the vegetable.

Perhaps, however, leaves are rather analagous to muscles, although they are not, as in them, fixed by a tail; because in vegetables there is no voluntary motion. Leaves are either simple, having one leaf only on a petiole, or proceeding from the same point; or compound, having several leaves on one petiole; the component leaves are called leaflets.

The advantages of leaves for feeding cattle, are not much attended to in this country; but in Italy and Sweden they are considered a great resource. The leaves of the elm, the maple, and the poplar, are preferred in Italy; but those of the oak and the ash are also used. They are gathered about the end of September, or beginning of October, and after being spread on a pavement to dry, for three or four hours, they are put in wooden casks, or in pits covered first with straw, and then with clay or earth. There is no dry food on which cattle and sheep thrive better than on leaves well-preserved. The sheep of Sweden, which are kept seven months in the house, have one meal every day of the leaves of the birch, the willow, &c. The leaves of Scotch fir, given to sheep in snow, save much hay, and they keep dry perfectly well in winter.

The leaves of various trees may, doubtless, be used for the tanning of leather. The colour of many dried leaves strongly indicates the presence of tannin.

Leaflet. See LEAF.

LEAGUE, a measure of length, containing more or fewer geometrical paces, according to the usages and customs of different countries. A league at sea, where it is chiefly used by us, although a land measure of the French and Germans, contains 3000 geometrical paces, or three English miles. The French league contains sometimes the same measure; but in some parts of France it consists of 3500 paces: the mean or common league consists of 2400 paces, and the little league of 2000. The Spanish league is larger, seventeen of which make a degree. The Dutch and German league contain each four geographical miles.

Leap year. See Bissextile.

Learning. See Ancient Languages, Ancient Learning, Education, and Language.

LEASE, generally a written instrument, conveying or letting lands, tenements, and many other kinds of property, in consideration of rent, annual, or other recompence made for life, for years, or at will; but always for a less time than the interest of the lessor in the premises; for if it were the whole interest it would be an assignment. He who demises, or lets, is the lessor, and he to whom the thing is demised, or let, is the lessee.

A lease may either be made by writing or word of mouth; the last is called, in law, a lease by parol. The former is most usual, and the best; and by the statute of frauds, 29 Charles II. c. 3, all leases of lands, except leases not exceeding three years, must be made in writing, and signed by the parties themselves, or their agents duly authorised, otherwise they will operate only as leases at will.

Leases are considered as deeds, and in their execution require the usual ceremonies of sealing, delivery, &c. They are also liable to a stamp duty, in proportion to the yearly rent. Leases where the rent is under 20*l.*, pay a stamp duty of one pound; where the rent is 20*l.* and under 100*l.*, a stamp duty of 1*l.* 10*s.*

LEASH, a leather thong. In the sportsman's vocabulary, a leash implies three.

LEATHER, the tanned, or dressed skins of various animals.

For *tanned leather*, see Tanning.

Leather is *curried* for boots, shoes, &c. thus: the hide is first soaked thoroughly in water, then placed on a polished wooden beam, with the flesh side outwards, and pared with a broad sharp knife, till all the inequalities are removed, and it is reduced to the requisite thinness. It is then again washed, and rubbed with a polished stone, and, while wet, is besmeared with oil, generally cod-oil, or a mixture of this and tallow. When hung up to dry, the moisture evaporates, and the oil, which cannot be dissipated by mere exposure, gradually takes the place of the moisture, and penetrates deeply into the pores of the leather. It is then dried, either in the sun or in a stoved room. The leather is *blacked* on the grain side, simply by rubbing it with an iron liquor, made with sulphate of iron, or some such material. On the flesh side the blacking of the leather consists of lamp-black and oil.

Tawed, or dressed leather, is made chiefly from the lighter and more delicate skins of lambs, sheep, goats, and calves. Though there is no little difference between the dressing of shammoy leather, alum-leather, Hungary-leather, Morocco-leather, parchment, and tanning, yet the skins which pass through the hands of the several workmen, ought to be, for the most part at least, washed clean from blood and impurities, in running water; set to drain, worked with the hands, or pounded with wooden pestles, in vats; put into the pit filled with water, in which quicklime is dissolved, in order to loosen the hair; and passed through a variety of other processes, in order to render them fit for any subsequent operation of tanning or dyeing, and shamoying. In this state the skins are called *pelts*.

If the pelts are to be tawed, they are put into a solution of alum and salt, in warm water, in the proportion of about three pounds of alum and four pounds of salt to every 120 middle sized skins, and worked about therein till they have absorbed a sufficient quantity. They are then taken out, washed in water, then put into a vat of bran and water, and allowed to ferment for a time, until much of the alum and salt is got out, and the thickening caused by them is, for the most part, reduced. They are now stretched on hooks, in a lofty room, with a stove in the middle, and remain there till fully dry. After this, to give them a glossy finish, they are again soaked in water, to extract more of the salt, and then put into a pail containing the yolk of eggs beaten up with water. Here they are trodden for a long time, by which means they imbibe the substance of the egg. After this they are dried, and finished by glossing with a warm iron. Tawing, therefore, appears to consist in the leather's imbibing something from the alum and salt; possibly alumine, which is certainly never again extracted by the subsequent washing, &c.

Shammoyed leather is, generally, sheep or doe-skin, prepared in the way mentioned for alum and tawed leather, and dyed if necessary, and then finished in linseed oil. This forms the common coach-leather, breeches leather, &c. and is the only kind which, when dyed, will bear washing without the colour being materially injured.

Dyed Leather. The colours given to leather are various, sometimes dependdant upon mere fancy, and sometimes upon real utility; the materials employed are various, according to the country in which the process takes place.

For *English Morocco leather* the skin is taken after it is cleaned, and worked as already discribed under tawed leather, from the lime water, and the thickening thereby occasioned, is brought down by a bath of dog's or pigeon's dung, diffused in water, where it remains till sufficiently supple, the lime being got out and the skin made a perfectly white clean pelt. When it is to be dyed red, it is sewed up in the form of a sack, with the grain side outwards, and immersed in a cochineal bath of a warmth just equal to what the hand can support, and is worked about a sufficient time till it is uniformly dyed. The sack is then put into a large vat containing sumach, infused in warm water, and kept for some hours there, till it is sufficiently tanned. Skins intended to be blacked, are merely sumached without any previous dyeing. The skins thus coloured are dried and polished as follows: They are first stretched very tight upon a smooth inclined board, and rubbed over with a little oil to supple them. Those intended for black leather, are previously rubbed over with iron liquor, by means of a stiff brush, which instantly strikes a deep and uniform black: they are then polished by hand, with a polygonal ball of glass. Lastly they are grained, or ribbed by rubbing the grained surface of the leather very strongly with a ball of box-wood, cut in a proper manner, for the desired purpose.

In the process for making *real* Morocco leather, the skins after coming from the bran, are thrown into a second bath made of white figs, mixed with water. In this they remain four or five days, when they are thoroughly salted with rock salt alone; after which they are fit to receive the dye; which, for the red, is cochineal and alum; for yellow, pomegranate-bark and alum. The skins are then tanned and dressed with a little oil, and dried.

Much excellent leather, and of various dyes, is manufactured in Russia. See TOOKE's *View of the Russian Empire.* The *Saffian*, or Manoquin, is prepared largely at Astracan, from buck's and goat's skins. *Shagreen* is also manufactured at the same place: it consists only of horses or asses hides; and of these, only a small part cut from the crupper-line along the back in a semicircular form, about 34 inches upon the crupper, and 28 along the back. The chief dyes are green, black, and blue.

A *Blue colour* is given to leather by immersing the skins for 24 hours in urine and indigo, after which, it is boiled in alum: or, the indigo may be mixed with red wine, and the skins immersed in it.

Red may be made by first washing the skins, then soaking them for two hours in an infusion of galls, which is to be wrung out, after which they are to be immersed in a liquor prepared by a solution of privet, alum, and verdigris in water, when they must be steeped in a dye made of Brasil-wood boiled with ley.

Purple, is made by wetting the skins with a solution of roch alum, in warm water; and when dry, they are rubbed by the hand with a decoction of logwood in cold water.

A *light green*, may be communicated to leather by sap-green, diluted with boiled alum water. A *dark green* cast, by steel filings, and sal-ammoniac steeped in urine, for a considerable time.

Yellow, is given by a decoction of aloes and linseed oil; or by a solution of dyer's green-weed. An *orange* by fustic berries, boiled in alum water; a deeper orange by turmeric.

Leather may be rendered *waterproof* by various means; one of the simplest and best is that mentioned under the article Blacking. An application of tar to leather will also render it waterproof.

Mr. Bellamy took out a patent some years since, for making all kinds of leather water proof: it consists simply in boiling linseed, poppy, or sweet oil, with white copperas, sugar of lead, or other drying substances, with which the leather is to be anointed.

LEATHER-EATER, or *Dermestes*, a genus of insects, consisting of eighty-five species. The larvæ, or grubs of this tribe, devour dead bodies, skins, leather, and almost any animal substance, and are exceedingly destructive to books and furniture. They chiefly inhabit Europe; nine of the species found in our own country. The *lardarius*, the pest of museums, libraries, preparations of natural history, and old bacon, inhabits Europe; it is black; shell cinereous on the upper half. The *domesticus*, is also black, and is the insect which makes the round holes in our furniture, reducing it to powder. The *fumatus*, is found on flowers and in houses, and has a great resemblance to the *violaceus*, which is blueish-black, an elegant and splendid animal found in dead bodies. The *surinamensis*, has a brownish body, found in South America, in flour and meal which have been kept too long.

LEAVEN, strictly signifies, sour dough, which acquires its acidity when preserved after kneading flour with yeast, in order to ferment a larger quantity of paste. It is a very imperfect substitute for yeast, and ought to be used only when yeast cannot be obtained. See Barm and Bread.

LECTURE, a reading; it, however, more commonly implies a discourse pronounced upon some scientific subject. The practice of teaching the various sciences by lectures has, in our own country, considerably increased: it is, beyond question, the best method of making all science popular, and cannot be too much encouraged.

LEECH, or *Hirudo*, a genus of worms comprehending seventeen species some of which are found in all quarters of the globe. The following are the chief:

The *medicinalis*, or Medicinal leech, is olive-black, with four yellow ferruginous lines, and spotted with yellow beneath: body elongated, above composed of numerous annular wrinkles, which it can contract or expand at pleasure: mouth smaller than the tail, and armed with three cartilaginous teeth, with which it draws blood; tail composed of an annular muscle, by which it has the power of fastening its body to any object. Found in stagnant ponds; it is oviparous, the eggs being hatched by the heat of the sun: this species is used very commonly for the abstraction of blood from the human body.

The *sanguisuga*, or Horse-leech, is elongated, olive-brown, with an ochre-yellow marginal band. Found in stagnant waters, ditches, and ponds; from four to six inches long; sucks blood with great avidity, and in large quantities.

The *viridis*, or Green-leech, with a depressed, oblong body, is green, with a transparent margin, and pointed at the tail; about an eighth of an inch long; inhabits clear waters, and like most of the genus, has a power of reproduction, nearly equal to the polypæ: for if divided crosswise, laterally, or in any other direction, the parts will become perfect animals, and may be re-divided, and re-produced *ad infinitum.*

The *stagnalis* is elongated, cinereous; they after exclusion adhere to the belly of the mother. The *geometra,* is yellowish-green, with a row of white spots; has four eyes. Found in fresh waters; fixes itself on the bodies of trout, and other fishes, after the spawning season; eight lines long. The *crenata,* is greenish, approaching to ash; found in shallow streams among aquatic plants.

Medical leeches are best preserved in vessels half filled with soft-water, kept in an equal and moderate temperature (50° of Fahrenheit) and covered over with a coarse cloth, so as to admit the air. The water should be changed once a week, and all the dead or sickly leeches removed. Leeches which have been used should not be returned to the stock till they appear to have completely regained their health and vigour, which is known by their feeling hard and firm. As we are ignorant of their proper natural food, it is useless to attempt to feed them; but in winter it may, perhaps, be advantageous to put some moss into the vessel in which they are kept.

Leeches are usefully applied where local blood-letting is necessary, as in opthalmia, and particularly to places where cupping-glasses cannot be applied. It is sometimes difficult to make them bite. The best mode of applying them is, to take them out of the water for some minutes before they are used, and to dry them well with a very soft cloth, directly before they are applied. The part should also be cleaned with soap and water, then washed with a little pure water, and made very dry: and if there be any hairs on the spot, they must be close shaved. When, however, they will not readily fix, the part may be punctured with a lancet; or, putting them into a large quill, cut at both ends, and applying the end at which the animal lies, to the part, with the finger over the other, is a never-failing mode of making them bite. The quill is to be withdrawn when they are firmly fixed. They drop off spontaneously when they are gorged with blood; and they may be separated at any time by sprinkling a little salt on the head; and after they are removed, salt sprinkled upon them, will cause them to disgorge all the blood which they have sucked; after which, they should be immediately thrown into clean water, which being repeatedly changed for three or four times, they soon recover their health and vigour. Vinegar, it is said, will cause the leech to discharge the blood equally well with salt, and is less injurious to the leech. In some habits, where there is a disposition to erysipelatous inflammation, their bites occasion a considerable degree of irritation and swelling, which is exceedingly troublesome; but, in general, they heal easily and without inconvenience.

LEEK, or *Allium porrum,* a well-known species of garlic, common to our own gardens, but to what country indigenous, is not certainly known. Leeks form a useful stimulating variety among our culinary vegetables, and may be eaten by the robust with advantage, but they very often disagree with the valetudinarian, and the dyspeptic. Their medicinal qualities are unimportant.

They are usually considered biennial, but they are in some situations almost perennial, or rather the roots are renewed annually in the earth in the same place, if not disturbed, for a series of years. See ONION.

LEG, in anatomy, that part of the lower limb, between the knee and the instep. The leg consists of two bones: the shin-bone is called *tibia,* near the lower end of which is a process forming the inner ancle. The other bone, which is considerably smaller, is called *fibula,* the lower end of which makes the outer ancle.

The human legs are subject to fractures, sprains, and ulcers. See FRACTURES, SPRAINS, and also BANDY-LEGS.

LEGACY, a bequest of a sum of

money, or any personal effects of a testator; and these are to be paid by his representatives, after all the debts of the deceased are discharged, as far as the assets, or property, liable to payment of debts and legacies, will extend. All the goods and chattels are, by law, vested in the representative, who is bound to see whether there be left a sufficient fund to pay the debts of the testator, which, if it should prove inadequate, the pecuniary legacies must proportionably abate.

Legacies are liable to various stamp duties. See EXECUTOR.

LEGUME, in botany, a pericarp of two valves, in which the seeds are fixed along one suture only. It is usually of a membranous texture, and commonly one-celled; some are, however, two-celled, others jointed, and others divided into several cells. The shell of the pea is a legume.

Lemnian earth. See CLAY.

LEMON-TREE, or *Citrus Medica*, a variety of the citron, is a native of Abyssinia and Persia, whence it was formerly brought into Europe. It is now cultivated in Spain, Portugal, and France, and is not uncommon in our green-houses. It is a beautiful evergreen, of small growth, sending off numerous branches covered with a greyish bark. The leaves are alternate, of a shining pale green colour, about four inches long, and two inches broad. The flowers, which appear through the greater part of the summer, are large and odoriferous. The fruit usually called LEMON, is an ovate berry, of a pale yellow colour, and filled with vesicles, distended with an extremely acid juice. The rind is double: the exterior p[illegible] is thin, and yellow, and chiefly consists of a great number of glands, filled with a very fragrant essential oil, well known by the name of ESSENCE OF LEMON. The essence of lemon found in the shops, and which is imported from abroad, is by no means so pure as that which can be obtained from the fresh lemon peel by simple abrasion. It is used chiefly as a perfume. The rind is warm, aromatic, and slightly bitter, and is useful in dyspepsia. Spanish lemons are most esteemed. See the next article.

LEMON-JUICE, the liquid obtained from lemons by moderate pressure. This juice is sharp, but very gratefully acid. It consists principally of the citric acid, mucilage, extractive matter, and a small proportion of sugar and water. The simple juice soon spoils, and therefore the crystallized acid is generally used in its stead. (See CITRIC ACID.) It is refrigerant, and antiseptic; diluted with water, and sweetened, it forms the beverage called *lemonade;* which is extremely useful for quenching thirst, and abating the heat in various diseases. Given alone, to the extent of a table spoonful for a dose, it allays hysterical palpitations of the heart; and in combination with carbonate of potash, (half a fluidounce of the juice, to one scruple of the salt,) taken in a state of effervescence, is used with great success to stop vomiting. A more useful and pleasant effervescing draught may be made, by putting a table spoonful of lemon juice, mixed with a small quantity of sugar, into a tumbler, and pouring over it half a pint of soda water. Lemon juice is successfully used in sea scurvy; but its continued use is said, notwithstanding, to be hurtful to the general health of the sailors.

Syrup of lemon, is made thus: Take of strained lemon-juice a pint; refined sugar two pounds. Dissolve the sugar in the lemon-juice by a gentle heat, taking off the impurities if any should arise. This is an agreeable syrup for acidulating barley water, or other drinks in fever; it is also a useful addition to gargles, in inflammatory sore throats.

The following observations ought to have accompanied our article *Citric Acid.* The solution of this acid in water, in the proportion of one ounce of the crystals to one pint of water, answers nearly all the purposes of recent lemon-juice; and is even preferable for forming the common effervescing draught with carbonate of potash. A solution of one scruple in one pint of water, sweetened with sugar which has been rubbed on fresh lemon-peel, forms a grateful refrigerant beverage, resembling lemonade, and equally useful in febrile and inflammatory complaints. But it is said, that the crystallized acid is not equally useful in the scurvy as the fresh juice of the fruit.

LEMON, Salt of, a preparation sold in the shops for the purpose of getting out iron moulds from linen, cotton, muslin, &c. It contains no acid of lemon whatever, but is simply equal parts of cream of tartar, and *sal acetosa*, or salt of sorrel, rubbed into a powder. See Dock.

Lemonade. See Lemon Juice.

Lenitive Electuary. See Confection.

LENTIL, or *Ervum lens*, an annual plant, of which there are two varieties: the one with large, the other with small seeds. They are eaten in some countries as we eat peas, but they are more flatulent, and more difficult of digestion.

Lentisk. See Pistachia.

Leopard. See Cat.

LEOPARD'S BANE, the Roman, or *Doronicum*, a genus of plants, consisting of six species, all European plants: the two following are worth noticing: the *pardalianches* is a native of Germany, having denticulate leaves, and yellow flowers. It is often cultivated in our gardens, which it may be by seeds: its root given in large doses is poisonous. The *austriacum*, with denticulate leaves, is found wild in our own mountainous pastures.

LEOPARD'S BANE, the German, or *Arnica*, a genus of plants, consisting of twenty-four species, of which the *montana*, or mountain arnica, is the only one deserving of notice. It is a native of the northern parts of the continent of Europe, and of Siberia. It is cultivated in our gardens, producing in July flowers of a deep yellow colour, tinged with brown. The root is perennial. The leaves and flowers are narcotic, stimulant, and diaphoretic; in large doses emetic and cathartic: they have been given with advantage in paralytic affections, gutta serena, gout, rheumatism, and chlorosis. The root is tonic and aromatic. It may be given in substance, or in an infusion, made by macerating one drachm and a half of the leaves and flowers, or two scruples of the bruised root, in thirteen fluidounces of water, and straining through linen. The infusion soon ferments. The dose of the powdered herb, is from five grains to ten; of the infusion, one fluidounce and a half, twice or thrice a day. If given in too large doses, it produces great anxiety, pain, vomiting, and the other deleterious effects of powerful narcotics.

Externally, the powdered leaves may be used as an errhine.

LEPROSY, or *Lepra*, a disease of the skin, appearing at first in red pimples, or pustules, on different parts of the body. Sometimes they appear single, and sometimes a great number arise together, especially on the arms and legs. As the disease increases, fresh pimples appear, which joining the former, make a sort of clusters. The pustules are rough, whitish, and scaly; when scratched, the scabs fall off, a thin ichor oozes out, and hardens into a scaly crust. The whole body is at length covered with a scaly crust.

This disease is little known in this country. The cure consists in the internal use of antimonial, and mercurial medicines, for a considerable length of time. In conjunction with these, warm bathing, particularly the vapour bath, (See Bath,) has often been employed with advantage.

Although leprosy, strictly so called, is a very rare disease, yet to this head may be referred a variety of cutaneous affections, which are in this country very common, and often very obstinate. They appear in different forms; sometimes in red pustules; sometimes in white scurfs; sometimes in ulcerations; and sometimes a transition from one form to another takes place. All these will often give way to the remedies already mentioned; but they sometimes fail, or are improper to be prescribed. In some cases purging, mineral water, or the decoction of elm bark, (See Elm,) will be of service. Where there is a watery itching, and spreading eruption, more particularly incident to old persons, a strong decoction of juniper tops and berries, drunk to the quantity of a quart a day, and long persisted in, has been very effectual. Different external applications, such as an ointment of sulphur, the ointment of nitrated quicksilver, tar ointment with calomel; (See **Tar ointment**,) or a weak solution of corrosive sublimate, in an almond emulsion, in the proportion of half a grain of the former, to an ounce of the latter, have been frequently beneficial: at the same time, these mercurial preparations cannot be applied, even externally, with too much caution.

The diet of persons labouring under such complaints, cannot be here specified; the weakly, and the old, will require, however, a more generous one than the healthy and robust. The bowels should, in every case, be kept soluble.

LETHARGY, or *Lethargus*, a disease, nearly allied to apoplexy. It is distinguished by great drowsiness, or inclination to sleep, from which the patient is with difficulty roused. Swelled and protuberant eyes, are remarkably characteristic of the disease. In some persons, lethargy appears to be almost a constitutional defect, and continues for years, without any further inconvenience than the propensity to sleep upon a cessation of muscular motion, and after taking food. It is produced by various causes: pressure on the brain is, however, one of the chief. This pressure may either arise from fractures of the skull, from water collected in the cavity of the skull, or from a preternatural determination of blood to the head. It is said, also, that fright, anger, the depressing passions, sneezing medicines, and the strong exhalations of flowers, will sometimes cause the complaint. The cure must, of course, depend in some measure, upon the cause. If it proceed from wounds, or fractures of the skull, our attention must be directed to these; clysters, bleeding, blistering, vomiting, and purging, according to circumstances are indicated. A spare diet, and an avoidance of all stimulating liquids, are in general necessary. Persons who are constitutionally lethargic, should be careful to eat and drink sparingly, avoiding all hearty meals; and keep the bowels open by aloetics. Fox-glove has been given for this last species of the complaint; but with doubtful success. See **Apoplexy**.

LETHARGY, of **Horses**, is distinguished by his resting his head, with his mouth in the manger, and his poll often inclined to one side; he evinces a disposition to eat, but generally falls asleep with the food in his mouth. If a horse continue long in this state, he falls into an atrophy, or universal decay. In some instances this complaint is said to be occasioned by a species of ragwort, which grows in moorish districts.

Cleansing the bowels, and indeed the whole alimentary canal, is, in this complaint, indispensable. The purging ball mentioned under the article **Aloes** may be used for this purpose. Laxative clysters may be also advantageously given, see **Clyster**. After which, warm stimulants, such as ginger, cayenne pepper, grains of paradise, and bark, with snake root, promise the most success. See **Staggers**.

LETTER, a term applied in a great variety of ways. A letter, in its primitive sense, implies the sign of a sound; of such signs words are composed: hence originated the letters of the alphabet.

A letter, or epistle, is a written or printed communication, addressed to some person or persons. Letters are either private or public. Private letters are those by which the intercourse between persons residing at a distance from each other is carried on; this medium of communication forms, next to social, personal intercourse, one of the most agreeable interchanges of intellectual ideas which can possibly be invented. The form and style of a letter should be suited to the subject, and to the person to whom it is addressed; and, at the same time, should convey in the simplest and most appropriate language, without art or affectation, the ideas which may be desired to be conveyed. Rules have been laid down for the writing of letters; but the best rules are those which are prompted by nature, civility, and good manners. Every person ought to remember that in writing a letter, it becomes a species of publication, and that it might be seen by others besides the person to whom it is specifically addressed; hence the necessity of taking care that, in our epistolary correspondence, the thoughts should be not only appropriate, but that they should be such of which we should at no time have occasion to be ashamed.

Public letters are those generally addressed to some person through the medium of the press. Except in their mere form, they require the same attention to their composition as other literary productions.

LETTER of Attorney, or *Power of Attorney*, is an instrument giving to a second person authority to do any lawful act in the stead of the principal, or person so granting it. It is sometimes revocable, and sometimes not: in the latter case, the word irrevocable is inserted in the instrument. The authority given must be strictly pursued; and if the attorney does less than the power, it shall be void; if more, it shall be good as far as the power goes, and void as to the rest; but both these rules have many exceptions. A letter of attorney is liable to a stamp-duty if for the sale, transfer, acceptance, or receipt of dividends of any of the public funds, of 20s; if for any other purpose 30s.; and 20s. for every 1080 words above the first.

Letters Patent. See Patent.

Letters, postage of. See Post.

LETTUCE, or *Lactuca*, a genus comprehending twenty-one species, almost all European plants; a few indigenous to South America; and three common to the wastes, hedges, or old walls of our own country.

The *Sativa*, or Garden lettuce, is well known as an agreeable esculent; the following varieties are those chiefly cultivated: the common, the cabbage, the cilicia, the Dutch brown, the Aleppo, the imperial, green capuchin, the Versailles, or upright white cos, the black cos, the common white, the red capuchin, the Roman, the prince, the royal, and the Egyptian lettuce. Of these the first is common in all gardens. It may be sown in all seasons of the year; but in shady borders during the hot months; the cabbage lettuce should also be sown at different seasons, to have a continuance throughout the summer. The first crop should be sown in February, in an open situation; the others at the interval of three weeks. But the latter crops should be sown under cover, though not under the drippings of trees. After sowing successive crops for the summer in April, May, and June, towards the end of August they may be sown for a winter crop, to be preserved under glasses, or in a bed arched over with hoops, and covered with mats. The most valuable of all the English lettuces are, the Egyptian green cos, the Versailles or white cos, the cilicia, and the black cos. The brown Dutch and green capuchin are very hardy, and may be sown late under walls, where they will stand the winter. Some of these kinds, the black cos for instance, should have its leaves tied together, to whiten the inner part. Many of them, however, require no more attention than merely being transplanted after being taken from the seed bed, to fifteen inches distance, kept clear from weeds, and, in very dry weather, to be occasionally watered.

In obtaining the seeds of the different varieties, care should be taken not to let them stand too near to each other, or their individual characters will be materially altered.

As food, the garden lettuce, when eaten at night, is slightly narcotic, and, we think, well calculated to allay the irritability of the nervous system.

The inspissated juice of the garden lettuce has been latterly recommended as a substitute for opium, where, from peculiarity of constitution, opium cannot be taken. It is called *Lactucarium*, by the Edinburgh College. It has the colour, and in some degree the taste and odour of opium. The dose is from one grain to six, in the form of pill: or of a tincture, made with one ounce of lactucarium, and one pint of proof spirit, from ten to sixty drops may be taken. The London college, however, takes no notice of this plant; and many physicians think it altogether unimportant.

LETTUCE, the STRONG SCENTED, or *Lactusa virosa*, is an indigenous biennial plant, found growing on the banks of ditches, and borders of fields, flowering in July and August. The stalk rises about three feet in height, erect, slender, prickly below, smooth above. The leaves are rather smooth, and toothed; the flowers are numerous, and of a sulphur yellow colour. The leaves and stem, the smell of which is fœtid, and resembling in some degree that of opium, contain a white opaque juice, abounding more copiously when the plant is in flower, at which time it should be gathered, and the juice expressed. This inspissated juice is narcotic and diuretic. The dose is six grains, gradually increased. The same observations apply to this as to the last article, which see.

Lettuce, Horse's. See SOW THISTLE.

Lettuce, Lamb's. See CORN SALAD.

LEVEL, an instrument used to make a line parallel to the horizon, and to continue it out at pleasure; and by such means to find the true level, or the difference of ascent or descent, between two or more places, for conveying water, draining fens, &c. Several instruments have been contrived for this purpose; the most simple, however, is made of a long wooden trough, or canal, which, being equally filled with water, its surface shews the line of level: where works of moderate extent are carried on, and where the perfect level of each stratum of materials is not an object of importance, the common *Bricklayer's level*, made in the form of an inverted T, thus ⊥, having a plumb suspended from the top, and received in an opening at the junction of the perpendicular, with the horizontal piece, will answer well enough. The principle on which this acts is, that as all weights have a tendency to gravitate towards the centre of the earth, so, as the plumb is a true perpendicular, any line cutting that at right angles, must be a horizontal line at the point of intersection.

There are various other levels of different shape, such as the carpenter's, the paviour's, and the mason's level; but they operate precisely upon the same principle as the bricklayer's level, and therefore need no description.

LEVER, in mechanics, one of the five powers; it consists of a straight bar, of iron or wood, &c., supposed to be inflexible, supported on a fulcrum or prop, by a single point; about which all the parts are moveable. The lever is the first of those simple machines called mechanical powers, as being the simplest of them all; and is chiefly used for raising great weights to small heights. The lever is of three kinds. The first kind is exemplified in using the poker of a common fire; in pincers, scissars, snuffers, &c. The steel-yard and the common balance are also levers of this kind. The second kind is where the bar is passed through a ring, and the end is made to touch the ground, or other support, in order to lift the body to which the ring may be attached. To this kind of lever may be also referred the oars and rudder of a boat; the masts of a ship, cutting knives fixed at one end, doors, whose hinges serve as a fulcrum, &c. In the third kind of lever the power acts between the weight and the prop; such are ladders raised by a man somewhere between the two ends, to rear it against a wall, or a pair of tongs, &c. By this kind of lever too it is, that the muscular motions of animals are performed. A fourth kind of lever, called a bended lever, such is a hammer in drawing a nail, &c., has been mentioned. In all levers, the universal property is, that the effect of either the weight or the power to turn the lever about the fulcrum is directly as its intensity and its distance from the prop; whence it is deduced that parallel forces acting perpendicularly upon a straight lever, keep it in equilibrio, they will be to each other reciprocally as the distances from the fulcrum at which they act.

LEVERET, a hare during its first year. See HARE.

LEYDEN PHIAL, in electricity, a glass phial or jar, coated both within and without with tin-foil, or some such conducting substance, that it may be charged with the electric fluid, and employed in a variety of useful and entertaining experiments.

LIBEL, injurious reproach or accusation, written and published against the memory of one who is dead, or the reputation of one who is alive, and thereby exposing him to public hatred, contempt, and ridicule. A libel may also be directed against the government, or public bodies of men forming a part of the government, such as the House of Commons, or Lords, the Ministry, &c. When, however, a writing inveighs against mankind in general, or against a particular order of men, it is no libel; it must descend to particulars and individuals to make it a libel. But a general reflection on the government is a libel, though no particular person is reflected on: and the writing against a known law is held to be criminal. This last, however, must be understood with limitation: for if temperate discussion upon the laws of a state were forbidden, an end must soon be put to every species of improvement in legislation.

The remedies for libel are of two kinds; by indictment or information, and by action. The former is for a public offence: for, it is said, that every libel has a tendency to the breach of the peace, by provoking the person libelled to break it: which offence is said to be the same in point of law, whether the matter be true or false; and therefore it is that the defendant, on an indictment for publishing a libel, is not allowed to allege the truth of it by way of justification. This is the constant doctrine of our law-courts; but, in many cases, the common sense of mankind is manifestly opposed to it. In the remedy by action, which is to repair the party in damages for the injury done him, the defendant may, as for words spoken, justify the truth of the fact, and shew that the plaintiff has received no injury at all.

In all cases for libel, however, whether by indictment, information, or by action, the *Jury are to judge both of the law and the fact.* This function of the jury is, perhaps, next to Magna Charta, the Act of Habeas Corpus, and the Bill of Rights, one of the best safeguards of the liberties of an Englishman.

LIBER, in botany, the inner bark of a vegetable, being the third integument. It is membranous, juicy, and flexible; from it the wood is gradually formed. See BARK.

LIBERTY, freedom. The absolute rights of man have been aptly denominated the natural liberty of mankind. This natural liberty consists in a power of acting as one thinks fit, without any restraint or control, being a right inherent in us from our birth. But this natural liberty must be in part surrendered when man enters into society, and submits to government. Political or civil liberty, is natural liberty restrained by human laws no farther than is necessary and expedient for the general advantage of the public: all restraint which exceeds such necessity and expedience is wrong: hence every wanton or causeless restraint of natural liberty, whether practised by a monarch, by nobility, or a popular assembly, is a degree of tyranny; in this view, law itself is often tyrannical; but nevertheless, laws, when prudently framed and administered, are the best safeguards of rational liberty: for in a society where there are no laws, there can be no proper liberty. See GOVERNMENT, LAWS, and RIGHT.

LICHEN, the name given to a disease of the skin, which has been defined an extensive eruption, consisting of small elevations of the cuticle, with an inflamed base, not containing a fluid, nor tending to suppuration; it affects adults, is connected with internal disorder, usually terminating in scurf, recurrent, and not contagious. Several varieties of this disease have been observed. The *simple lichen*, affecting weak and irritable habits, and women more than men: the *lichen agrius*, which sometimes is produced by imprudent exposure to cold, and is then accompanied with quick pulse, vomiting, head ach, &c.; the *lichen pilaris*, as well as the last, frequently occurs in persons accustomed to drink largely of ardent spirits undiluted; the *lichen lividus*, principally affects young persons, and often children living in confined situations, or having little exercise. This species of lichen, which is very similar to the land-scurvy, may be presently cured by nourishing food, moderate exercise in the open air, with the use of the bark, and the dilute sulphuric acid, or the tincture of muriate of iron. The *lichen tropicus*, is a complaint, known by the prickly heat, almost universally affecting Europeans, settled in tropical climates.

The cure of the different species of lichen, must depend, in great measure, upon the disorder with which they are accompanied. See RINGWORM, TETTER, &c.

Lichen, in Botany. See LIVER-WORT.

LIE, a falsehood, or an untruth, told with an intention to deceive, for some interested or vicious purpose. Attempts have been made to distinguish between those falsehoods which are said not to be lies, and those lies which are not literal or direct falsehoods. But, in morals, all fraud is wrong; and although the casuist, and the worldly-minded may persuade themselves, that a concealment of the truth by a lie, may contribute to their individual interest, or advantage, yet the injury done to their own minds, as well as to the minds of others, by a lie, is great beyond calculation. We know that many pretended exceptions to the telling of the plain truth have been plausibly advanced; but, from its ultimately injurious consequences, no present advantage can atone for a deliberate falsehood in any case: the vice of lying is, therefore, at all times, wrong and demoralizing. Even the silly habit of exaggeration in common discourse, should be carefully guarded against. HYPERBOLE is, we fear, too often a step to the greater wrong.

LIENTERY, a species of diarrhœa, in which the food passes through the intestines without having undergone any alteration. See DIARRHŒA.

LIFE, in natural philosophy, animal or vegetable existence. The principle, or cause of life, is still, notwithstanding all the researches of physiologists, involved in impenetrable obscurity, upon which we will not, because we cannot, pretend to throw any light.

The *duration* of human life is a subject, however, to which it is desirable to pay attention, because the length, or shortness of our lives, appears to depend upon causes over which we have often considerable control.

The common duration of the life of man, since any records have been kept which may be considered as indubitable, is from 70 to 80 years. There are, however, some extraordinary exceptions to these common periods; many men in our own time living to upwards of one hundred years. The oldest persons of whom we have any record, since the christian era, are: *Peter Zorten*, who died in Hungary in 1724, at the age of 185 years; his wife also lived to the age of 164, they having been intermarried for the space of 147 years. *Louisa Truxo*, a negress, living in Tucuman, in South America, in 1780, then aged 175 years. *John Rovin*, a native of Hungary, lived to the age of 172 years. *Henry Jenkins*, who lived in Yorkshire, died at the age of 169 years, in 1670. *Joseph Sursington*, aged 160. A *Polish Peasant*, 157; and *Old Parr*, as he is commonly called, who lived in Shropshire to 152 years, and died in 1635. Our records furnish us with males and females of different countries of the world, who lived upwards of one hundred years, through almost every intermediate period, up to the age of old Parr, but it does not appear that any have exceeded his age, except the persons above mentioned.

From a review of all our records of longevity, it may be concluded, that the life of man does not in any degree grow shorter, in proportion to the length of time the world has existed; and, also, that although longevity may, perhaps, be more frequent in some districts than in others, yet that it is by no means restricted to any particular district.

The following appear, however, to be most essential causes of longevity. *Air and climate:* for although almost all climates give instances of longevity, yet the majority of instances occur in cold and moderate climates. The heat, the diet, and the excesses more generally indulged in in hot countries, are enfeebling causes. The being born of *healthy* parents, are circumstances evidently favourable to the duration of human life.

The form and size of the individual, are also of some importance: it is generally admitted, that persons of a compact shape, and of a moderate stature, are the most likely to live long. Nothing is more conducive to longevity than *equanimity and good spirits.* This is a point which cannot be too much inculcated, as experience continually shows, that many persons perish from despondency, who, if they had preserved their spirits and vigour of mind, might have survived many years longer. Neither the irritable who are agitated by trifles, nor the melancholy, who magnify the evils of life, can expect to live long. Those who suffer their strength and spirits to be exhausted by severe study, or other mental exertion, seldom reach a great age. Of 1712 persons, who lived above a century, Fontenelle, who did not quite reach 100 years, is the only author of any note; and his great age is ascribed to the tranquil ease of his temper, and his liveliness of spirits. Among those who have devoted themselves to the study or practice of music, instances of great age have been very frequent. The *occupation* is also of no trifling moment in the prolongation of human life. No person who leads an idle life, will ever attain great age: but health, and long life, depend much on the manner in which the individual is employed. Those occupations are certainly the most conducive to the duration of life, which are carried on in the open air, and require activity or labour; thus farmers, gardeners, and labourers in the country, are, in general, the longest lived. The *mode of living*, is also deserving of considerable attention. The present general habits of society militate most unquestionably against long life. but most persons, however, have it in their power to regulate their manner of living; and by attention to their food, clothing, employment, rest, and temper of mind, might not only contribute to the prolongation of their lives, but preserve themselves from many diseases, and greatly increase their relish for all the substantial enjoyments of life. The importance of wholesome food for the preservation of health, and promoting long life, and the avoiding of all excess, whether in eating, drinking, or the passions, are sufficiently obvious. Some instances are, indeed, recorded of persons who have continued to commit excesses, and yet have lived long; but these can be considered only as exceptions to the general rule. Experience ought to point out those articles of food which are best adapted to the constitution of each individual. It may, however, be observed here, that people in general, especially those who do not labour, eat much more than nature requires; and that a little abstinence, or self-denial, will often prevent, or even cure disease. On this subject, what we have said under the articles EXERCISE, and FOOD, is deserving of serious attention.

In contemplating the origin and duration of human life, it is found, that the birth of male children is considerably more numerous than that of female, in the proportion of about 14 to 13; but notwithstanding this number of births in the males, the number of living females is considerably greater than that of males, in an average proportion of the different stages of life: the males being exposed in youth to more dangers, and consequently to death, will, most probably, account for this difference.

From the most accurate accounts published in different countries and climates, it appears that of one thousand persons living in large cities no less than thirty-five or thirty-six die annually; while in country places or small towns, only from twenty-eight to thirty deaths happen in a similar period. The late reduction of the ravages committed by the small-pox must, however, alter this calculation for large cities: it is said (see SMALL-POX) that the lives saved in this metropolis, alone, by vaccination in the last fifteen years, are above 23,000.

Life Annuity. See ANNUITY and INSURANCE.

Life Boat. See BOAT.

LIFE-PRESERVER a name given to several inventions for the preservation of persons in danger of drowning from shipwreck and other accidents.

The life preserver invented by Mr. DANIEL, is made of pliable water-proof leather, and double throughout. The head of the wearer is to pass between two straps which rest upon the shoulders, and his arms are to pass through the spaces on the outside of the straps, so as to allow the machine under them to encircle the body like a large hollow belt; on the lower part of the back is a strap which is to pass between the thighs of the wearer and buckle in front. The machine thus fixed, is to be filled with air by the mouth of the wearer, who is to continue blowing through a stop-cock in the front of the machine till it is fully inflated; the air is then confined by turning the cock. The person wearing this machine floats about breast high in the water with perfect ease and freedom, and may move about at pleasure. When it is well filled with air from the lungs it is capable of preventing four persons from sinking under water.

Another life preserver has been suggested by M. GRANT, for which the society of arts awarded him their Gold medal. It consists in the conversion of a ship's water-cask to this purpose; and which has been found adequate to its important design: the method is simple, the expense trifling, and requires no care. Indeed, all the ship's water-casks now in use could be converted into life-preservers upon this plan in a few hours. The cask is attached to a bed composed of wood, which is nearly square, by lashing only, without a single nail in any part of it. The bung-hole of the cask should be made in shape of an oblong square, and large enough to admit a man's arm. It should be sawed out of a piece of inch-thick cork, and fitted nicely with a wood file. The top of the bung must be covered with a piece of sheet iron about ⅛th of an inch in thickness; a hinge and hasp are to be cut out of the same, and the iron plate riveted through the thickest part of the cork by five small rivets, the centre one having an eye upon the top to which the fore-lock which receives the bung is fastened. The bed and bung once completed, and fourteen iron thimbles and five dozen bottle corks procured, all the rest is sailors' work. Independently of the bed and all the other apparatus, one pound and three quarters of cast iron is necessary to every gallon of air for ballast, and three gallons of air for each man: for instance, a 36 gallon cask requires 8 feet of 1½ inch plank, 6 fathoms of 2 inch-rope, 15 fathoms of inch-line, 5 dozen of corks, and 63lbs of cast iron for ballast: this will support twelve men in sea-water; it is always at hand, occupies no more than the usual space, and no part of the apparatus is in the way. The corks are attached to the lines to make them float and prevent the hand from slipping. Loops are also made around the cask with the cork line for the convenience of holding fast. It is scarcely possible to convey the particulars of this apparatus without a drawing: and those who desire a more minute account, will of course consult the 36th volume of the Transactions of the Society of Arts, from which this description is taken. We merely add that when a case of danger occurs it is only necessary to cut the deck-lashing of the cask, to discharge the water, to secure the bung, and throw the cask overboard; the land being to Leeward, the wind and sea will set the cask and men towards the shore: from the manner in which the cask is fixed, the cask will always float steadily, and cannot roll or upset.

LIFE-RAFT, a raft, contrived as the preceding article, for the purpose of saving the lives of persons in danger of drowning from shipwreck, &c.

The life-raft, invented by Mr. T. Cook, and described in the 37th Volume of the Transactions of the Society of Arts, consists of a square piece of canvas, containing holes for the men to sit in, with strengthening bands for them to sit on. Two sides of the canvas are nailed, the other two sides are laced to a square frame, which takes apart at two corners, that it may be rolled up with the canvas in a very small compass. The casks, which should be those used for holding the ship's water, are secured, one at each corner, by slings and a strapping line. This raft has the advantage of being fitted in a few minutes, at a time when a few minutes might decide the fate of the crew, who are not required to lash themselves, but merely to sit astride on the bands, being well buoyed up, and to remain quiet till driven on shore by the wind and waves; neither can they be washed off, if ever so benumbed with cold. A raft of 7 feet square will carry 13 men; one of four feet six inches square will carry five men, with casks in proportion.

Another life-raft is also described in the same volume, by Mr. T. W. Rodger, which is formed of four casks, as in the former case, but it is constructed of such materials besides, as every vessel is obliged to take to sea, for other purposes, viz. slings, capstan-bars, gratings, or hatches, and handspikes, lashed together, with small ropes or gaskets. Casks of any size may be used; and small spars, such as boat-masts, top-gallants, studding-sail booms, topmast studding-sail yards, and many more which it is unnecessary to enumerate may be substituted for capstan-bars. The raft is to be constructed upon deck thus: while part of the crew are getting the casks out of the hold, let the rest get the capstan-bars, grating, handspikes, and lashing ready. Lay two capstan-bars parallel to each other, about six feet apart, on which place three gratings and lash them together; then lay two more capstan-bars athwart the end of the former, one on each side of the grating, and secure them with good lashings, which will form a square platform, for the men to stand on. Next, let an empty butt be secured to each side of the square by means of slings. At the same time, part of the crew may be employed in forming a square on the other side of the deck with four more capstan-bars, which is to be placed on the top of the cask, and passed down to the lower square. A handspike may also be lashed to each corner of the raft in an upright position, a life line being passed round it, and made fast to the upper end of the handspikes, which will be above the platform; lines may be passed also in various directions across it for the men to hold by. It may be hoisted into the water in various ways. The buoyancy of four butts, containing 108 gallons beer measure, is equal to the weight of nearly thirty men, allowing 150lbs. to each man.

LIGAMENT, in anatomy, an elastic and strong membrane connecting the extremities of the moveable bones. They are divided into *capsular*, which surround joints like a bag, and *connecting* ligaments.

LIGATURE, in surgery, a thread or silk, &c. of various thickness, covered in general, with white wax, for the purpose of tying arteries, a vein, or other parts. It should be round and very firm, so as to allow being tied with some force, without the risk of breaking.

Ligatures are also used to extend or replace bones, which are broken or dislocated, or to secure the splints which are usually applied to fractures and to facilitate the operation of blood letting: in such cases, they are made of linen, calico, flannel, leather, or any other elastic substance. Although considerable compression by ligatures is often necessary, it is nevertheless possible to do much mischief by excessive or long-continued compression, and, therefore, in the application of ligatures, much care and circumspection are necessary.

LIGHT, that radiant, imponderable, ethereal matter, by means of which objects are seen by the eye.

The velocity of light is almost inconceivable; it has been shown that it is about eight minutes in passing from the sun to the earth, so that it may be considered as moving at the rate of 200,000 miles in a second.

Some bodies intercept light, or are opaque; others allow its transmission, or are transparent; and there are gradations from perfect opacity, to nearly perfect transparency. When a ray of light passes through the same medium, or when it passes perpendicularly from one transparent medium to another, it continues to move without changing its direction; but when it passes obliquely from one medium into another of a different density, it is thrown more or less out of its former direction, and is said to be *refracted*. The refraction is *towards* the perpendicular, when the ray passes into a denser medium, and *from* the perpendicular when it passes into a rarer medium. When the rays of light arrive at the surface of bodies, a part of them, and sometimes nearly the whole, is thrown back or *reflected*; and the more obliquely the light falls upon the surface, the greater in general is the reflected portion. In these cases the angle of reflection is always equal to the angle of incidence.

A sun-beam passing through a triangular prism of glass gives rise to a series of brilliant tints similar to those of the rainbow. See COLOUR.

If a solar beam be refracted by a prism, and the coloured image received upon a sheet of paper, it will be found, on moving the hand gently through it, that there is an evident increase of temperature towards the red ray. If the coloured rays be thrown successively upon delicate thermometers, it will be found that if the heating power of the violet rays be considered as 16, that of the green rays will be 26, and of the red 55. The heating power of the spectrum extends also beyond the red ray: a thermometer in the red ray rose to 7 in ten minutes; but just beyond the red ray the rise was 9. That these calorific rays are susceptible of refraction and reflection, is proved by the intense heat produced when the solar rays are concentrated into a focus, by a lens, or by a concave mirror. See BURNING GLASS.

The radiant matter emitted by terrestrial bodies at high temperatures agrees, in many of its properties, with that constituting the solar rays; but in others it presents material differences. The effect we perceive in approaching a fire chiefly results from radiation; and if a concave *metallic* mirror be held opposite the fire, a heating and luminous focus will be found.

In nature, the influence of the solar rays is very complex, and the growth, colour, flavour, and even the forms of many vegetables, are much dependent upon them. This is seen in many plants which are protected from the immediate contact of light: celery and endive are thus cultivated, with the view of rendering them palatable; and plants which are made to grow in a room imperfectly illuminated, always bend towards the apertures by which the sun's rays enter. The changes, too, which vegetables effect upon the circumambient atmosphere, are influenced by the same cause.

In the animal creation, brilliancy of colour, and gaudy plumage, belong to the tropical climates; more sombrous tints belong to the polar inhabitants; and dull colours characterize nocturnal animals, and those who chiefly abide below the surface. In a word, light appears to be one of the most necessary and useful stimuli in the due support of not only vegetable but of most animal existence, and chiefly so to man. Hence the necessity, in order to the preservation of good health, that we should be exposed to much light. Amongst other causes the obstruction of the rays of light by those columns of dense smoke which hover continually over large cities, is one which has considerable influence on health, and which has been thought, hitherto, of too trifling moment. He, therefore, who shall invent a method by which such smoke may be absorbed, will confer a lasting benefit on mankind. It is said that a Mr. PARKS, of Warwick, has adopted a plan for the consumption of smoke, and that it has also been tried in the metropolis with success. Should this process be made public before our work is completed, we shall describe it under the article SMOKE, which see.

Light-headedness. See DELIRIUM.

LIGHTNING, a vivid, bright flash of fire, which suddenly appears in the atmosphere, and instantly vanishes; it is sometimes accompanied with a zig-zag line of light, of extraordinary intensity and brightness: it is also often attended with heavy clouds and thunder; but occurs at other times when the atmosphere is serene, especially in summer evenings.

Of the causes of this phenomenon we shall treat under the article THUNDER; we shall here only treat of the best method of avoiding the dangers, and of obviating the effects of lightning.

When persons happen to be overtaken by a thunder-storm, although they may not be terrified by the lightning, yet they naturally wish for shelter from the rain which usually attends it; and, therefore, if no house be at hand, they generally take refuge under the nearest tree. But they thus expose themselves to a double danger; first, because their clothes being thus kept dry, their bodies are rendered more liable to injury, the lightning often passing harmless over a body, the surface of which is wet; and, secondly, because a tree, or any elevated object, instead of warding off serves to attract and conduct the lightning, which, in its passage to the ground, frequently rends the trunks and branches, and kills any person or animal who happens to be close to it at the time. Instead of seeking protection, then, by retiring under the shelter of a tree, hay-rick, pillar, wall, or hedge, the person should either pursue his way to the nearest house, or get to a part of the road or field which has no high objects that can draw the lightning towards it, and remain there until the storm has subsided.

It is particularly dangerous to stand near leaden spouts, iron gates, or palisados at such times; metals of all kinds having so strong an attraction for lightning as frequently to draw it out of the course which it would otherwise have taken.

When in a house avoid sitting or standing near the window, door, or walls during a thunder gust. The nearer you are placed to the middle of the room the better.

The greatest danger to be apprehended from lightning is the explosion of powder magazines, which might in a great degree be secured from danger by insulation, or by lining the bulk-heads and floorings with materials of a non-conducting nature, the expense of which would not be great.

When a person is struck by lightning, strip the body, and throw buckets full of water over it for ten or fifteen minutes; let continued frictions and inflations of the lungs be practised; and gentle shocks of electricity should be made to pass through the chest, when a skilful person can be procured to apply it; and apply blisters to the breast.

The use of electricity in these cases of apparent death is earnestly advised, because it does not depend upon mere theory: for instances of its success in real cases, as well as in experiments made upon fowls, and other small animals, corroborate it. Many of which, after being completely deprived of sense and motion, by a *strong* electrical shock passed through the chest, have been recovered by transmitting *slighter* shocks through the same parts; and in this way animation has been suspended and restored alternately, for a considerable number of times. Besides, persons seemingly killed by lightning, have frequently been restored by the ordinary means used in cases of apparent death; and, from the [illegible] electricity, there is [illegible] that it would have [illegible] many cases where these alone have failed. See CONDUCTOR, ELECTRICITY, and THUNDER.

Lignous Acid. See PYROLIGNOUS ACID.

LIGNUM, in botany, the wood, or woody part of the trunk of trees.

LIGNUM VITÆ, or GUAIACUM, in botany, a genus consisting of three species, as follow:

The *Dubium*, having one pair of leaflets, oblong, lanceolate, obtuse; a native of Tongatabu.

The *Sanctum*, with leaflets in many pairs, acute; a native of the West Indies.

The *Officinale*, or Lignum vitæ, is a tree having leaflets of two or three pairs, obtuse; a native of the West Indies. It rises forty feet in height, and is four or five in circumference. The wood, gum, bark, fruit, and even the flowers, have been found to possess medicinal virtues. The wood is brought principally from Jamaica, and from its hardness, heaviness, (its specific gravity being 1.333,) and beauty, is used for a variety of purposes, both ornamental and useful. It scarcely discovers any smell, unless heated, or while rasping, when it yields a light aromatic one. When chewed it impresses a slight acrimony, biting the palate and fauces.

A peculiar characteristic of this wood, its shavings, and its gum is, that they all acquire, upon fracture, or by any other means, when exposed to the air, a *greenish* hue; this greenish hue is, however, most conspicuous in the gum.

Guaiacum, or *Gum Guaiacum*, as it is often called, although it is a peculiar *resin*, sometimes spontaneously exudes from the tree; but the greater part found in commerce is obtained by making incisions into the trunk, or by sawing the wood into billets, and boring a hole longitudinally through them, so that when one end of a billet is laid on the fire, the guaiacum melting, runs through the hole from the opposite end, and is collected in a calabash. Boiling the raspings, or chips, in salt and water, also separates it, which, as it rises to the surface, may be collected by skimming. This substance was generally regarded as a gum-resin, till Mr. Brande demonstrated it to be a peculiar substance, differing both from gum and resin. Alcohol dissolves readily 95 parts in 100 of it; the solution is decomposed by the mineral acids, hence they should be never given in prescription with it

Both the wood and gum are stimulant, diaphoretic, diuretic, and purgative. The dose of the gum is from ten grains to half a drachm in the form of pills or bolus; or made into an emulsion with water, by means of mucilage, or the yolk of an egg: large doses purge. The following are the preparations most in use:

Mixture of Guaiacum. Take of guaiacum one drachm and a half; refined sugar two drachms; mucilage of gum-Arabic two fluidrachms; cinnamon-water eight fluidounces. Rub the guaiacum with the sugar, then with the mucilage, and, during the trituration, add gradually the cinnamon water. This is a convenient mode of exhibiting guaiacum. The dose is from half a fluidounce to two, given two or three times a day, diluted freely with tepid barley-water or gruel, to assist its operation.

Tincture of Guaiacum. Take of guaiacum, in powder, four ounces; of rectified spirit of wine one pint. Macerate for fourteen days, and strain. The dose is from one fluidrachm to three, in any convenient vehicle. When this tincture is given in the form of a draught, it must be triturated with yolk of egg, or with mucilage, in order to combine it with water.

Ammoniated Tincture of Guaiacum, commonly called volatile tincture of guaicum, is made thus: Take of guaiacum, in powder, two ounces of aromatic spirit of ammonia twelve fluidounces. Macerate for fourteen days, and strain. This tincture is more efficacious as a stimulating sudorific than the preceding preparation. The dose is from half a fluidrachm to two fluidrachms, triturated with any mucous or viscid matter.

Although the wood contains the same medicinal properties as the gum, we do not think it at all necessary to give any form for its use, as the gum itself contains, in a more concentrated and efficient shape all the virtues of the wood.

Gum guaiacum has lately been proposed as a *test* for wheat flour. It has been ascertained that when guaiacum and pure starch are kneaded together no colour is developed; that guaiacum scarcely becomes blue, when the flour contains little gluten, or has undergone any alteration in its quality; but that when gluten or fine wheat flour is kneaded with powdered guaiacum the mixture assumes a *fine blue colour.*

LILAC or *Syringa*, a genus of plants comprehending four species as follow: the *vulgaris*, or common lilac, producing white, blue, or deep purple flowers. It is a deciduous shrub, a native of Persia, sometimes rises to the height of ten or fifteen feet, and is a well known ornament in our gardens and shrubberies. The *chinensis*, or Chinese lilac, has flowers like the last, supposed to be a native of China. The *Persica*, or Persian lilac, is of much lower growth than the first; the flowers are pale blue and of an agreeable odour. The *suspensa* is a native of Japan.

The lilac is propagated most exuberantly by suckers, which may be removed from the parent stock at any period after the fall of the leaf, and before its re-appearance; it grows in almost any soil or situation.

LILY, or *Lilium*, a genus of plants, containing sixteen species, chiefly natives of Asia, a few of Europe and America; the following are the chief:—

The *candidum*, or white lily, is a native of Syria. The root has been occasionally used, boiled in milk and water as an emollient and suppurating cataplasm; but our modern materia medicas take no notice of it. The *bulbiferum*, orange or yellow lily, is a native of Europe. The *chalcedonicum*, or scarlet martagon, is a native of Persia. The *martagon*, or purple martagon, having dark purple flowers with black spots, is a native of Europe. The *camschatcense*, or Kamschatka lily, is a native of the country whose name it bears, and also of Canada. Its roots constitute a considerable part of the food of the Kamschatkadales; they are gathered in August, dried in the sun, and laid up for winter use; they answer almost every purpose of flour.

All these species are bulbous rooted, herbaceous, flowing perennials, having erect annual stalks, three or four feet high, with corols uniformly beautiful; some are superb, white, red, scarlet, orange, purple, and yellow. They may be propagated both by offsets and seeds. The seeds should be sown the beginning of August in pots or boxes of light earth, and be placed where they may have the benefit of the morning sun.

LILY OF THE VALLEY, or *convallaria*, a genus of plants consisting of eleven species, scattered over the globe, of which several are natives of England. The elegance of these plants is well known, as also the ease with which they may be propagated by their creeping roots. The flowers were formerly in the materia medica, but are of no importance.

LILY, THE WATER, or *nymphæa*, a genus of plants comprehending eight species, of which the following are the chief:—The *lutea*, or yellow water-lily, with heart-shaped leaves, very entire, calyx five-leaved, longer than the petals; stigma very entire; a native of the stagnant waters of our own country: another variety with a toothed stigma, and petiole semicylindrical at the base, two-edged at top. The *alba*, white water-lily, or candock, is also common to our stagnant waters. The *lotus*, or Egyptian water-lily, resembles the *alba* in the form of its flower, but is a little toothed at the edge; a native of the hot parts of the East Indies, Africa, and America; flowers near Cairo in September. Bread was formerly made with the seed [illegible] a variety which produces a root like the potatoe, upon which the inhabitants of the banks of the lake Menzale feed very generally. The flower of the lotus is truly majestic, it rises two feet out of the water; the rivers about Damietta are covered with it.

LILY-DAFFODIL, or *Amaryllis*,

a genus of plants comprising thirty-seven species, some with a one-flowered, others with a two-flowered, and others again with a many flowered spathe. Each of the four quarters of the globe yield several of the species, but the greater number are Cape plants. The flowers are all exquisitely beautiful; but the *lutea*, from the south of Europe, is the only one that will flourish in this country out of our green-houses.

LIME, in mineralogy and masonry, the basis of chalk, many stones, marble, and mortar.

When lime is electrized negatively with mercury, an amalgam is obtained, which, by distillation, affords a white metal; this metal is called *calcium;* and when it is exposed to air and gently heated, it burns and produces the *oxide of calcium*, or *lime.*

Lime appears to consist of 19 parts of this metallic base united to 7,5 parts of oxygen.

The combinations of lime are very abundant natural products, and of these the native *carbonate*, which, more or less pure, constitutes the different kinds of marble, chalk, and lime-stone, and which is also the chief hardening principle of shell, coral, &c. may be considered as the most important.

Pure lime may be obtained by exposing powdered white marble to a white heat. Its colour is grey; it is acrid and caustic, and turns vegetable blues green; its specific gravity is 2,3; it is very difficult of fusion. Exposed to air, it becomes white by the absorption of water and a little carbonic acid.

When a small quantity of water is poured upon lime, there is a great increase of temperature resulting from the solidification of a portion of the water, and a white powder is obtained, called *slacked* lime, which is a hydrate; it appears to consist of one proportional of water equal to 8,5, and another of lime equal to 26,5.

At the temperature of 60, 750 parts of water are required for the solution of one part of lime. Lime-water is limpid and colourless, and it converts vegetable blues to green. It is usually prepared by pouring warm water upon powdered lime, and allowing the mixture to cool in a close vessel; the clear part is then decanted from the remaining undissolved portion of the lime. When lime-water is exposed to the air, a pellicle of carbonate of lime forms upon its surface which, if broken, is succeeded by others, until the whole of the lime is thus separated in the form of an insoluble carbonate. Lime-water is, therefore, an excellent test of the presence of carbonic acid.

Carbonate of lime occurs in nature, in great abundance, and in various forms. The primitive form of crystallized carbonate of lime, or *calcareous spar*, is an obtuse rhomboid: its specific gravity 2,7. It occurs in every kind of rock, and its secondary forms are more numerous than those of any other; sometimes it forms fine *stalactites* of which some of the caverns of Derbyshire furnish magnificent specimens; a carbonate of lime, called *satin spar*, is found in Cumberland. All the varieties of marble and lime-stone consist essentially of carbonate of lime; of these *white granular lime-stone*, or primitive marble, is most esteemed. The celebrated statuary marbles of Paros and of Mons Pentelicus, near Athens; the marble of Carrara, the many beautiful marbles of Derbyshire, of Westmoreland, of Devonshire, and Anglesea, and the dark polished stones of Somersetshire, used for hearth-stones, mantle-pieces, &c. are all carbonates of lime, and may be all reduced to lime by merely submitting them to a strong heat, in order to drive off the carbonic acid; in which, indeed, the whole process of burning stones for lime consists.

Among the inferior lime-stones are many varieties, such are *common marble, bituminous lime-stone*, abundant upon the Avon, near Bristol, and known by the name of *swine-stone*, or *stink-stone*, from the peculiar smell which it yields when melted; *Oolite*, or *Roestone*, of which the houses of Bath are built, and its variety Portland-stone; *Pisolite* consists of small rounded masses, with a grain of sand always in the centre; and lastly, *chalk* and *marl.*

All these substances are more or less useful for ornamental purposes, or for building; they afford quicklime when burned, and in that state are of great importance as manures, and for mortar.

Excellent lime may also be obtained from most sea shells, of which it forms the principal part.

Lime is applied to soils recently reclaimed in a caustic state; but is generally slacked by throwing water upon the lumps. If water cannot be easily obtained, the lumps may either be divided into small heaps and covered with earth; or they may be made into large heaps, the lumps and earth in alternate strata, the lumps four inches thick and the earth six inches thick, and the whole covered with earth. When it can be had, it is a great advantage, to slack lime for manure with sea-water. When applied to land in a powdered state, lime tends to bring any hard vegetable matter in the soil into a more rapid state of decomposition and solution, so as to render it a proper food for plants.

Summer is the proper season for liming land; the most profitable period is when it is in summer fallow, in the months of June and July, that it may be completely mixed with the soil before the crop is sown. In a turnip crop, it should be laid on in the spring, or early in summer, before the turnips are drilled, in order that the lime may be thoroughly incorporated with the soil by the ploughings and harrowings it will receive; when applied to old ley it is a good practice to spread it on the surface previously to the land being broken up. The quantity applied per acre must vary according to the soil. From 240 to 300 bushels of unslacked lime may be applied on strong lands with advantage. Even 600 bushels have been laid on at once on strong clay, with great success. On light soils from 150 to 200 bushels will be sufficient; but such small quantities ought to be more frequently repeated. When applied on the surface of bogs or moors, a considerable quantity is used; and provided the land is naturally dry, or has been thoroughly drained, the more that is laid on the greater the improvement. The real quantity, however, of calcareous matter used, depends upon the quality of the stone. We state these general rules for the application of lime as manure, at the same time we think that considerable intelligence and discretion are necessary to determine in different soils, when lime may or may not be useful; and also when it is useful in its caustic and in its carbonated state: for we are far from thinking that the theory of the operation of lime as a manure is yet completely understood. See HUSBANDRY and MORTAR.

Lime combines with the acids, with most of which it has a very strong affinity, and forms a variety of bodies of more or less importance. It is found native in combination with the sulphuric acid in selenite, gypsum, plaster stone, or alabaster. See GYPSUM.

In its crude, caustic, or pure state, lime never is given internally. But dissolved in water (see below), or in the state of a carbonate (see CHALK,) or of a muriate, it is a very useful medicine. Muriate of lime is also used to produce extreme cold. See FREEZING MIXTURES.

Lime-water is ordered to be made by the London College thus:—Take of lime half a pound, boiling distilled water twelve pints; pour the water upon the lime, and agitate them together; cover the vessel directly, and set it apart for three hours; then preserve the solution upon the undissolved lime in well stopped glass bottles, and pour off the clear fluid when it is wanted for use.

It is inodorous and has a strong styptic, acrid taste. It unites with oil, forming an imperfect soap. See BURNS. It is decomposed by the acids and sulphur, the alkaline carbonates, phosphates, borates, tartrates, and citrates; the infusion of orange peel, columba, Peruvian bark, rhubarb, and senna; with any of which it should not be mixed, as a medicine. It has been found very useful, when taken internally, for dyspepsia, and also in diarrhœa, diabetes, fluor albus, and worms. Its use should, however, be occasionally suspended for a few days, as its long-continued action is injurious to the stomach. The dose is from two fluidounces to half a pint alone, or diluted with milk.

Solution of muriate of lime: Take of muriate of lime two ounces; distilled water three fluidounces. Dissolve the muriate of lime in the water, and filter the solution through paper. This solution is colourless, and has a disagreeable, bitter, acrid taste. It has been lately given as a deobstruent and tonic, in scrofulous and glandular diseases; and is said to be more beneficial, from its continued use in various forms, of scrofula, than any other remedy. Its operation is similar to that of muriate of barytes; but the danger of an over dose is less to be dreaded, and its good effects are more uniform and certain. The dose of the solution is from twenty drops to one fluidrachm, increased gradually to four fluidrachms, in a sufficient quantity of milk or water, repeated twice or thrice a day.

Lime is also used in some other preparations. See POTASH.

Lime accidentally swallowed, or inhaled in any quantity, is a fatal poison. Vinegar and lemon-juice are the best antidotes: give several glasses of water, mixed with a spoonful of either of these acids; or in defect of these, simple water, in such quantities as to cause vomiting. Emetics, however, or other irritating means, are to be avoided. If this be not sufficient, the *after* treatment, mentioned under the article AQUA-FORTIS, must be followed.

LIME, a fruit of the variety of the citron (see CITRON), growing abundantly in Jamaica. It is the smallest production of the lemon kind. It contains a strong acid, which, if used in moderate quantity, is useful for cooling drinks, and in the scurvy.

LIME-GRASS, or *Elymus*, a genus of plants, consisting of twelve species, scattered over the globe, three of which are common to our own country. The most valuable of these is the *arenarius*, or upright sea-lime grass, with a close erect spike. This grass is truly useful, it binding the loose sand together on our sea-coasts, by means of its long creeping roots. It is eaten by cows, horses, and goats.

LIME-TREE, LINDEN-TREE, or *Tilia*, a genus comprehending four species as follow: The *Europæa*, or European lime-tree, a native of Europe, and generally believed to be so of Britain. The wood is light, smooth, and spongy; it is used for making lasts and tubles for shoe-makers. Ropes and bandages are made from the bark; and mats and rustic garments of the inner rind, in Carniola, and some other countries.—The *Americana*, or Broad-leaved American lime-tree.—The *Pubescens*, or Pubescent Carolina lime-tree.—The *Alba*, or White lime-tree, is a native of Hungary. The flowers of the first are supposed to be anodyne and antispasmodic.

LIMPET, or *Patella*, a genus of fishes or snails, having a univalve shell, subconic, shaped like a bason; without spine. Two hundred and forty species are scattered over the globe; but the greater part found in a fossil state, or thrown up by the tide, and the natural residence unknown: about eight are inhabitants of our own coasts. It is subdivided into the following sections: Furnished with an internal lip; shell entire.—With the margin angular or irregularly toothed.—With a pointed recurved tip or crown.—Very entire and not pointed at the tip or crown.—With the crown or tip perforated.

The *Vulgata*, or Common limpet, is found on our own shores, attached to rocks, covered by the flux and reflux of the sea. It is also found inhabiting the marine rocks of Europe and India. The shell varies in colour, marks, and size. It is generally cinereous, white, or reddish, with or without bands. The shell is, sometimes, two inches high, and three or four wide; but on our own coasts, it does not often exceed one inch in height, and two in width; generally less. The limpet is, sometimes, eaten as food; but it is an indifferent dish. We have sometimes known it to produce nausea

The residence of the *Badia*, with a shell more or less flat, and two and three quarter inches long, is unknown. The *lacustras* inhabits the fresh waters of our own country, and of other parts of Europe.

LINCTUS, in pharmacy, a term applied to a soft and somewhat oily substance of the consistence of honey, designed to be licked off the spoon.

Linden tree. See LIME-TREE.

LINE, in geography and navigation, is emphatically used for the equator or equinoctial line.

LINEA-ALBA, or *white-line*, in anatomy an aponeurosis that extends from the scrobioulus cordis, or pit of the stomach, straight down to the navel, and from thence to the pubes.

LINEN, in commerce, a well known kind of cloth made of flax. Linen forms a more strong and durable kind of clothing than that made of cotton, but being a better conductor of heat, it is by no means so salutary. *Damp linen* is proverbially unwholesome, and against which scarcely too much precaution can be adopted. For an indelible ink, for marking linen, &c. See INK.

LING, a fish. See COD.

LING, a plant. See HEATH.

LINIMENT, in pharmacy, an oily mucilaginous substance, of a mediate consistence between an ointment and an oil, but so thin as to drop: liniments are used only as external applications; we have prescribed several liniments in various parts of our work: the following are, however, very useful.

Liniment of ammonia. Take of solution of ammonia one fluidounce; of olive-oil, two fluidounces; shake them together till they unite. This liniment may be made at any time more mild, by the addition of a larger proportion of oil.

This is an excellent rubefacient; and is efficaciously employed in inflammatory sore-throat; and to relieve rheumatic pains, rubbed upon the skin over the part affected. It is also very useful in various complaints of horses and cattle.

Liniment of camphor. Take of camphor half an ounce; of olive-oil two fluidounces; dissolve the camphor in the oil.

This is a very useful application to glandular swellings, sprains, bruises, and to joints affected with rheumatic pains. It has also been recommended, with the addition of half an ounce of the solution of subcarbonate of potash, to be applied to the eye-lids, night and morning, in recent *gutta serena.*

Compound Liniment of camphor is also a very useful stimulant to sprains, bruises, and rheumatic pains. It is also an excellent vehicle for introducing opium into the habit by means of friction. One fluidounce and a half of this liniment, and half a fluidounce of tincture of opium, warmed and rubbed over the surface of the abdomen, quickly allays the pains of flatulent colic: or two fluidrachms of the rectified oil of amber, mixed with the same quantity of camphor liniment, will be sometimes of equal, if not of superior efficacy, laid on flannel and applied to the part affected in the same complaint.

Liniment of Lime. Take of lime-water and olive or linseed oil, of each three fluidounces; mix them.

This is very advantageously applied to burns and scalds.

Liniment of soap. Take of Castile soap three ounces; of camphor one ounce; of spirit of rosemary a pint. Dissolve the camphor in the spirit, then add the soap, and macerate in the heat of a sand-bath until they be dissolved.

This is that medicine so long known to the public under the name of OPODELDOC. It is stimulant and anodyne, and may be advantageously applied against local pains and in bruises, rubbed upon the part.

The above is the form of making this medicine, directed by the London College; but the following is a cheaper, and perhaps equally efficacious medicine. Take of soft soap five ounces; of proof spirit fourteen ounces; of oil of rosemary one fluidrachm; of oil of origanum half a fluidrachm; camphor three drachms; of rectified spirit wine four ounces. Dissolve the soft soap in the proof spirit; dissolve the oils of rosemary, origanum, and camphor, in the rectified spirit; and mix the whole together.

Liniment of turpentine. Take of cerate of resin eight ounces; of oil of turpentine four ounces. Melt the cerate, then add to it the oil of turpentine, and mix.

This liniment has been introduced in practice by Dr. Kentish, as a dressing to burns immediately after they happen, and until the loosening of the eschars. His plan of treating burns is, first to bathe the parts with warm oil of turpentine, and then to apply plasters of this liniment thickly spread over them. The strength being at the same time supported with wine, opium, and cordials. After the life of the parts appear to be restored, purges are given, the cordials omitted, and mild emollient dressings applied.

Liniment of Verdigris. Take of verdigris powdered an ounce; of vinegar seven fluidounces; of honey fourteen ounces. Dissolve the verdigris in the vinegar and strain it through a linen cloth; then, having added the honey, boil down the mixture to a proper consistence.

This preparation, commonly called *Egyptiacum*, is detergent and escharotic. It is used for taking down fungous flesh; and, considerably diluted, is a useful stimulant to foul ulcers.

It is also used to stimulate old and obstinate ulcers, and to the cracked heels, &c. of horses.

Linnet. See FINCH.

LINSEED, or LINTSEED, the fruit of the flax plant, or *linum.* The uses of linseed are mentioned under FLAX, to which, therefore, we refer. The uses of *linseed cake*, for fattening cattle, will be enlarged upon under the article OX.

Linseed oil is one of the most useful expressed oils, for the purpose of combination with various colours, which is known. It has the peculiar property of hardening, by exposure to air, into a tough tenacious mass, more especially is this the case if it be combined with lead, and many other of the metallic oxides. Hence its extensive use in painting. The drying properties of this oil are materially increased by boiling in it a portion of litharge, or other oxide of lead. Considerable care, however, is necessary in performing this operation, or a conflagration will be the result. Linseed oil, when thus treated, is known in commerce by the name of *boiled oil.* It is also used in medicine. See BASILICON, BURNS, and LINIMENT.

LINT, a kind of linen cloth scraped or beaten, so as to be soft and woolly, and is employed for dressing wounds, &c. No family should be without this useful and even necessary article.

Lion. See CAT.

LION-ANT, or *Myrmeleon*, a genus of insects, comprehending sixteen species, inhabiting the warmer parts of Europe, Africa, India, and America. The only species known in our own country is the *formicarius.* The animals of this tribe have a long acute mandible jaw; feelers six; stemmaless; antennas thicker at the top; wings deflected; tail of the male armed with a forceps composed of two straight filaments. The animals of this family prey with the most savage ferocity upon ants and smaller insects, notwithstanding their progress in walking is backwards; by stratagem, however, the lion-ant masters insects far superior to itself in strength. It digs in the loose sand a hollow hole, resembling a funnel, into which its prey stumbles, and is pierced by the forceps of the lion-ant which is lurking below.

Lion's-Tail. See MOTHER-WORT.

LIPS, in anatomy, the edge, or exterior parts of the mouth. For the treatment of hare-lip, see *Hare-lip*; for *chapped lips*, and *lip salve*, see CHAPS.

LIPPITUDE, an exudation, of a puriform humour, from the margin of the eye-lids, which, during the night, often dries, and attaches the eyelids together. This complaint arises from various causes. In infants, it is mostly accompanied with the disease called scald head. In adult, and old persons, it arises from various acrimonies; it is likewise common to hard drinkers. It also arises from suppressed gonorrhœa, or fluor albus; from scrofula. and scurvy. As it is not often a local complaint, in the cure, reference should be had to the primary disorder; much use of the eyes, and strong light, will, however, be generally found injurious in all these complaints. Reading small print, and by candle light, should be prohibited. Sometimes, however, the *ointment of nitric oxide of mercury*, or *ointment of nitrate of mercury*, known under the name of SINGLETON's *eye salve,* will be of service, when carefully and cautiously applied.

LIQUID AMBER, in botany, a genus, consisting of two species, the *imberbe,* a native of the East, and cultivated in Kew gardens; and the *styraciflua,* or styraxoozing liquid amber, a native of North and South America, which rises to the height of forty or fifty feet with great regularity, and produces terminal flowers, of a saffron hue, succeeded by a large brown fruit. The leaves, which are desiduous, emit an exquisite odour, and the stem yields a resinous juice, of nearly equal fragrance. This juice, though seldom used medicinally, is similar to storax; and it is said that the *liquid storax* is obtained by boiling from this plant.

LIQUOR, a general name for any liquid preparation; it is, however, more particularly applied to such as is either fermented or distilled; of the former class are beer, ale, wine, &c.; of the latter are brandy, gin, rum, and other ardent spirits.

LIQUORICE, or *Glycyrrhiza*, a genus of plants, containing six species, of which the following are chiefly worthy of notice: the *echinata*, or Prickly-podded-liquorice; the *hirsuta*, or Hairy-podded liquorice; and the *glabra,* Smooth-podded, or common liquorice. The first species grows naturally in Apulia and Tartary. The last is a native of the South of Europe and Syria. It flowers in August, but its seeds do not ripen in this country.

The greater part of the liquorice-root used in Great Britain, is the produce of its own soil by cultivation. The London market is chiefly supplied from Mitcham, in Surrey. It is a perennial root, running, when in its proper soil, a light sandy one, very deep. The stalk often attains the height of four or five feet; the leaves are alternate, pinnated, consisting of petiolated leaflets, with a terminal one, of a pale green colour. The flowers are of a blue, or purplish hue. It is propagated by cutting off the fibres which issue from the parent root near the surface: they should be divided into sets, of six or eight inches in length, each having at least one good bud, or eye, and planted in February, or the beginning of March. The soil should be light, sandy, very deep, and dug three spades deep. Each set should be placed in a row, twelve inches apart, with their tops about an inch under the surface, and the rows should be one foot and a half distant from each other

When the root is three years old, it is dug up for use in November. The whole roots are then washed, the fibres cut off, and the smaller roots separated from the larger ones; the former are dried and ground to powder; the latter are sold to the druggists. Liquorice-root is best preserved in moist sand.

This root is esteemed a pleasant demulcent, but on account of its bulk, it is rarely used in substance. A decoction of it, either alone, or in combination with other mucilaginous vegetables, is often given in catarrh, and in hectic and phthisical cases. In some cases of dyspepsia, where there is a deficiency of the natural mucus of the stomach, it is said to be of service. The dose of the root in powder, is from ten grains to one drachm; of the decoction, a tea-cup full frequently. An *extract* of the root is ordered by the London College, but it is rarely, if ever, prepared in this country. The common *Spanish Liquorice,* imported from Italy, or Spain, and which is, we understand, prepared from a farrago of herbs, generally supplies its place. It is useful for allaying tickling coughs, &c. But the medicinal powers of liquorice-root, and its preparations, are altogether of little importance. We are sorry to observe, that the liquorice-powder commonly met with in the shops, is little else besides flour, or some kind of coarse meal.

Liquorice, the wild. See Milk Vetch.

LITHARGE, an oxide of lead, of a yellowish red colour. It is used as a drying ingredient by painters; and is also an ingredient in the plaster, commonly called *Diachylon,* and in *Goulard.* See Lead, and Plaster.

LITHOGRAPHY, a species of engraving, or writing upon stone, which has lately come into use, and which promises to be of extensive utility.

The stones proper for lithography, must be of a calcareous nature, pure, hard, and of a fine grain. They must imbibe both moisture and grease with equal avidity. On this is founded the whole of the art. Stones for this purpose have been, till lately, imported from Germany, none having been found in England proper for the purpose; but it appears by a paper in the 37th Volume of the Transactions of the Society of Arts, that at a quarry at Wilmcots, near Stratford upon Avon, belonging to W. James, Esq. of Warwick, stone in any quantity may be obtained for lithographic engraving, equal to the German stones in texture and hardness, and capable of receiving any kind of drawings intended for lithographic purposes.

By means of this art, the painter, the sculptor, and the architect, are enabled to hand down to posterity as many fac-similes of their original sketches as they please. Men in office can obtain copies of the most important dispatches, or documents, without a moment's delay, and without the necessity of confiding in the fidelity of secretaries or clerks. And the merchant, and the man of business, can, in an instant, preserve what copies they may want of letters, tables, or accounts. The most extraordinary character of this art, consists in its giving *fac simile* copies of either writing, drawing, or painting.

This art has three divisions, the *elevated manner*; the *engraved manner*; and the *mixed manner.*

In the elevated manner, all those parts of the stone which are covered by a greasy ink, resist the action of the acid poured over the whole surface of the stone, by means of which the other parts of the surface become corroded; they stand, therefore, higher than the latter, being elevated from the plane surface of the stone.

In the engraved manner, all those lines, or parts of the drawing, or writing, which are to give the impression, are engraved into the surface of the stone by means of a sharp needle, or bitten into it by the action of an acid.

The first admits of greater expedition in taking the impression, and allows a greater number to be taken before wearing out, and is besides the most easily executed; the second admits of greater nicety of expression, and, in some particular cases, is of more easy execution to the artist.

This art also possesses a peculiarity which no other engraving, or printing, possesses; namely, that the elevated, as well as engraved lines, may, at once, be printed from the same stone.

The stones which are preferred for lithography, are those of a whitish yellow colour, because the artist is best enabled to perceive the drawing on it. The thickness must always be in proportion to the size of the stone. Small stones resist the force of the press without breaking, when of less thickness than great ones: small stones should, however, not be less than one inch and a half thick; neither should they be thicker than two inches and a half. In general, the best thickness of a stone, is from two, to two inches and a half. It must be rubbed down with fine sand to a perfect level, after which it is ready to receive the drawing.

The inks are of various kinds: one is composed of twelve parts of wax, four of common tallow, four of soap, and one of lamp black. Others are composed of shell lac, gum mastic, Venice turpentine, with wax, tallow, &c.; in various proportions, which our limits prevent us from detailing.

The art of transferring writing upon stone, is extremely easy and simple, and which it is not necessary for us to detail. The mode of taking *chalk drawings* will be, we conceive, a good specimen of the whole art.

The chalk is a composition of grease, wax, shell lac, soap, and lamp-black. The ink is composed of the same materials, but softer. When the drawing is executed, a weak solution of nitric acid is thrown over the stone; this operation slightly corrodes its surface, and disposes it to imbibe moisture with more facility; while the stone is wet, a cylinder of about three inches in diameter, and covered with common printer's ink, is rolled over the whole surface of the stone; the wet part, of course, refuses to take the ink, while the chalk being greasy, takes a portion of it from the roller. The stone is now ready for printing.

The press consists of a box, drawn by a wheel under a wooden scraper, pressing on it with great power; after the first impression, the stone is wetted afresh, again rolled over with the cylinder, drawn under the scraper, and so on. The same process is employed for ink-drawings, except that the solution of aqua-fortis must be stronger, and the printing ink stiffer.

Those of our readers who desire further information on this subject, may consult "*A Complete Course of Lithography*," by ALOIS SENEFELDER, the inventor of this art, and published by Akermann, London, 1819.

LITHONTRIPTICS, medicines, which possess the power of removing a disposition in the body to form stone and gravel. See GRAVEL, and STONE.

LITHOTOMY, in surgery, the art or practice of cutting for the stone.

LITMUS, ARCHIL, or *Turnsol*, a dye, in the form of a red paste, prepared from a species of lichen, which grows abundantly in the Canary Islands, in the South of France, and in several other parts. Many other species of lichen have also the property of assuming a beautiful purple, when prepared in the same manner as litmus. It is generally met with in commerce in the form of cakes, like annatto: these cakes are prepared both in Holland and London in large quantities, for the use of the dyers. The following is said to be the process: the lichen is first dried, cleansed, and reduced to powder in a sort of oil mill. The powder is next thrown into a trough, with one half its weight of pearl-ash, moistened with a little human urine, and allowed to ferment. This fermentation is kept up for some time, by successive additions of urine, till the colour of the materials changes first to red, and then to blue. While in this state, it is mixed with a third of its weight of very good potash, and spread upon deep wooden trays till it dries: a quantity of chalk is added, for no other object, as it appears, but to increase the weight.

The colour of archil is readily extracted by water, or by alcohol. The colour of the watery solution, or of any substance dyed with it, soon fades on exposure to air; hence it is used to give a gloss, or finish, to the deeper, and more permanent colours.

All acids, and salts with excess of acids, change the natural violet purple of litmus to red: and this change is effected so readily and perfectly, with a very small quantity of acidity, as to render litmus a valuable test to the chemist, to detect the presence of uncombined acids. Even carbonic acid, in so small a proportion as that in which it exists in the breath, (about five or six per cent. of the bulk of the air expired,) may be made to change the colour of litmus infusion, if a little of it diluted, so that the purple blue is scarcely visible, be shaken in a phial containing air expired from the lungs. When reddened by an acid, the blue is restored by an alkali; and thus litmus may be made a test both of acids and alkalies.

LIVER, or *Hepar*, the largest and most ponderous of the abdominal viscera, which in adults weighs about three pounds. It is of a deep red colour, and situated under the diaphragm, to which it is attached by the suspensary and other ligaments, in the right hypochondrium, its smaller portion occupying part of the epigastric region. It is divided into two principal lobes, the right of which is by far the largest. The chief use of this large viscus, is to secrete the bile, which is of such great importance in the separation of the nutritive matter of the food in the upper intestines.

This important gland is liable to considerable derangement and disease. But, notwithstanding complaints of the liver are very common, we do not think the treatment of them is, by any means, well understood. There appears to be a disposition in medical men, to consider all diseases of the liver as more or less inflammatory, and consequently depletion, abstinence, and other debilitating means, form the common routine in their removal.

It must, however, occur to the most inexperienced observer, that it is very possible for the liver to be affected, and yet that such disease may not be of the inflammatory kind. Another error, which we believe to be no less mischievous, is, that in most complaints of the liver, and many other glands, *mercury* is the sheet anchor upon which too many medical practitioners fully rely. Although we are not disposed to call in question the searching powers of this drug, yet we think that such indiscriminate practice is one of the most dangerous species of quackery, and cannot be too much, discountenanced. Some effect, it is true, is generally produced by a continued exhibition of mercury, and sometimes that effect is good; but we know that, in many cases, effects of a very different kind are produced. Of its ultimately debilitant powers, we wish our readers to be aware; and although energetic practitioners may sometimes by it effectuate much good, in a Family Cyclopædia we think it our duty to raise our warning voice against such quackery, even of the regular bred medical professor.

The difficulty of distinguishing different complaints of the liver is doubtless great. The state of the stomach, the pulse, the nature of the alvine evacuations, &c. must be carefully observed. Pains will sometimes be felt in the immediate region of the liver, accompanied with more or less dyspepsia, and clay-coloured fæces, but these symptoms alone, without positive tension, and swelling of the region of the liver, and a more full or frequent pulse than usual, are no symptoms of inflammation; nor should they be treated as such. Aloetic purges, a careful attention to food and drink, as mentioned under DYSPEPSIA and APPETITE, will be more likely to remove the complaint; if an occasional dose of calomel be interposed it should be very sparingly. It is said, indeed, that the liver is subject to two kinds of inflammation, the chronic and the acute, and that the former very often is not discovered except by an abscess found in the liver after death. But we think it much more probable that such abscess is the effect of some preceding inflammation, which was not attended to; and that to cure or relieve such complaints by treating them as inflammatory, even were they known to exist during life, would be perfectly absurd; and herein may, we believe, be sought the numerous errors which are committed in the treatment of liver-complaints. It is generally supposed, and with good reason, that in most hypochondriacal complaints, the liver is more or less affected. to treat these as inflammatory diseases would not be more absurd than injurious, and sometimes fatally so too.

The *inflammation of the liver* is attended with considerable fever; a frequent, strong, and hard pulse; high-coloured urine; an acute pain in the right side, beneath the ribs, increased by pressing upon the part, accompanied frequently with more or less swelling. The pain is sometimes in such part of the side as to make it appear like pleurisy; and, like that, is increased on inspiration. The disease is also attended with a cough, commonly dry, although sometimes moist; and often the patient cannot easily lie, except upon the side affected. The pain frequently extends to the clavicle, and to the top of the shoulder; it is also sometimes attended with hiccough, and sometimes vomiting. A yellowness of the skin and eyes is also an occasional symptom.

This disease is always attended with considerable danger, and therefore the best medical aid which can be obtained should be instantly sought. The cure must be performed by bleeding, blisters, mercury, relaxants, &c. See FEVER, INFLAMMATORY. But it sometimes happens that the symptoms at the beginning not alarming the patient, it is often too late before the remedies are employed. It frequently terminates in suppuration; sometimes the matter makes its way externally, and forms an ulcer difficult to heal, or which is never healed; sometimes it breaks into the cavity of the lungs, and is coughed up in great quantity; and sometimes it is discharged by the biliary ducts; or into the cavity of the abdomen. Very often a fatal hectic, in consequence of suppuration, is induced, which carries off the patient in a shorter or a longer period, depending upon a variety of circumstances, the mode of treatment, &c. In this stage of the disease, bark, beef-tea, and other nourishing diet, promise the most effectual relief. What is said under ALIMENT, APPETITE, and DYSPEPSIA, should be carefully attended to.

LIVER OF ANTIMONY, so called from its being of the colour of the liver, is made with one pound each of the sulphuret of antimony, and of nitrate of potash, and with one ounce of muriate of soda; the whole must be powdered and mixed, and thrown by degrees into a red-hot crucible; then by increasing the heat, let the matter be melted; and when cold separate it from the scoria.

It is an oxide of antimony, and not safe to be given internally. It is, however, occasionally given to horses, in doses of an ounce, as an alterative, and also to improve their appearance. But, notwithstanding its activity on the human body, it does not appear to be superior, if equal, to crude antimony, for the horse

Liver of sulphur. See SULPHUR.

LIVER-WORT, or *Lichen*, a genus of cryptogamous plants, consisting of nearly six hundred species, of which between two and three hundred are indigenous to our own country. The chief species are the *candelarius*, or yellow farinaceous lichen, common upon walls, rocks, boards, and old pales; the *parellus*, or craw-fish eye lichen, found also on walls or rocks;—the *parietinus*, or Common yellow wall lichen, very common upon walls, rocks, tiles of houses, and trunks of trees; the *prunastri*, or Common ragged hoary lichen, growing upon all sorts of trees parasitically, but generally most white and hoary on the sloe, old palm-trees, and old pales;--the *caninus*, or Ash-coloured ground liver-wort, found on the ground among moss at the roots of trees and shady places, and sometimes on heaths and stony places. It was formerly extolled as a medicine for curing the bite of a mad-dog, and as such had a place in the dispensatories, but is now deservedly neglected; — the *cocciferus*, or Cup-moss, is used by the common people for the hooping cough; but the principal of all the lichens is

Lichen islandicus, or ICELAND LIVERWORT, an indigenous perennial, growing abundantly in Iceland, and the north of Germany, and on most of the heaths and mountains of the north of Europe; and, it is said, also, in the northern parts of England, Wales, and in Scotland. It grows to the height of two or three inches only, and has a ragged bushy aspect; its colour is greenish yellow, or greyish brown. It is used in Iceland and Lapland as an article of diet; being boiled in broth or milk, after being freed from its bitter by repeated maceration in water, or dried and made into bread. The dried lichen differs very little in appearance from the recent plant. It is inodorous, and has a bitter mucilaginous taste. Boiled in water, it yields a yellow inodorous decoction, which thickens as it cools, becoming a tremulous jelly, resembling starch, but without any viscidity. By analysis, 100 parts of this lichen yield 64 of a substance analogous to vegetable gluten, insoluble in hot-water; 33 parts of a matter soluble in hot water, resembling starch, and 3 parts of a bitter extractive principle.

As a medicine, Iceland liver-wort is tonic and demulcent. Its virtues in the cure of phthisis have been highly extolled, but experience has not altogether confirmed the truth of the praises which have been lavished on it; as a demulcent, it is, however, superior to the mucilages; the bitter principle which it contains adding to its efficacy. It allays the tickling cough in this disease, relieves the oppressed breathing, involves the acrid matters in the stomach and bowels, renders more bland the whole mass of animal fluids, and at the same time tends to invigorate the digestive organs. It has also been found useful in debilities after acute diseases, and in emaciations arising from the great discharge of ulcers; in diarrhœa, dysentery, and hooping-cough. It is generally given in decoction, which is made with one ounce of the lichen, and a pint and a half of water, boiled down to a pint, and strained. The dose is from half a fluidounce to two fluidounces three times a day.

When the lungs, or other viscera, are actively inflamed, the bitter, in this medicine, is hurtful. It may be separated by cutting or pounding the lichen, macerating it in several waters, and then, after boiling it for ten minutes, and decanting off the water, boiling it to the form of a mucilage, in a fresh portion of water.

Several of the liver-worts produce various colour dyes. See Litmus.

LIXIVIUM, or Ley, a solution of salt or ashes in water, for various purposes in the arts, and in domestic economy.

LIZARD, or *Lacerta*, in zoology, a very numerous, active tribe of animals, of the class amphibia, order reptilia, all of which, except the aquatic ones, feed on insects. The *crocodiles* have both jaws moveable, and the largest mouth of all animals; their body is covered with callosities. The chameleons have a prehensile tail; sit on trees, walk slowly and irregularly, and have no teeth; eyes large, fixed in a wrinkled socket; tongue very long, worm-shaped, with which they draw in flies; head angular, covered with very thin, lucid tubercles, or scales. They may be thus sub-arranged :—Crocodiles,—Guanas, Cordyles,— Lizards proper,— Chamelions,—Geckos, — Skinks, — Salamanders, Newts, and Efts,—and Snake lizards. The following are the chief :

The *Crocodilus*, or Common, or Nilotic crocodile. Head armed; nape crenate; tail above with two lateral crests; another variety with its snout much longer than the head; nape naked Inhabits the Nile; from eighteen to twenty-five feet long; possesses amazing swiftness, voracity, and strength; smells of musk; roars hideously; devours men and other large animals, both aquatic and terrestrial; swallows stones to prevent the painful sense of hunger: overturns boats when taken in nets, and is not to be killed by a musket-ball, unless struck on the belly; is destroyed by tobacco; seldom moves but in a straight line, whence it is easily avoided. Eggs hardly larger than those of a goose, and deposited by the female in the sand. The eyes of this animal are wrinkled; the ears linear, closed with a flap above; teeth in the upper jaw forty, lower thirty-eight, and sharp; fore feet five-toed; hind feet four-toed, palmate. It lies in wait near the banks of the Nile, and snatches dogs and other animals, swallowing them instantly, and then plunging into the flood, and seeking some retired part, where it lies concealed till hunger again invites it to its prey. The eggs as well as the flesh of the crocodile are esteemed delicacies by some of the African nations, and constitute a part of their richest meals.

The *Gangeticus*, Gangetic, or Indian crocodile, is chiefly distinguished from the last by the peculiarity of its mouth, the snout being nearly three times as long as the head, and the great number of its teeth; being, in the upper jaw sixty, and the lower fifty-eight.

The *Alligator*, or Alligator, has a flat head; nape naked; tail, above, with two rough lateral lines. In its general habits, size, and manners, resembling the crocodile. Found in most parts of both Americas, between the tropics; in South Carolina, and some other latitudes without the tropics.

The *Monitor*, or Monitor lizard, of which there are seven varieties, inhabits America and Southern Asia; about three feet long; frequently accompanies the crocodile and alligator; of whose approach it is said to give notice to other animals by its hissing: whence its specific name.

The *Bimaculata*, or Pennsylvanian lizard; body greenish blue, spotted with black; tail twice as long as the body; inhabits the woods of St. Eustace and Pennsylvania, and lives in holes, gutters, and hollow trees; makes a hissing noise, and deposits its eggs in the earth.

The *Basilicus*, or Basilisk, has a long rounded tail; dorsal fin radiate, scaly, and which it can fold up or expand at pleasure, when sitting on a tree; inhabits South America, and appears to occupy a place between the lizard and the dragon. Its length is one foot and a half; a perfectly harmless animal; but possesses great agility, both in swimming and leaping from tree to tree.

The *Iguana*, or American guana, has a long round tail, is from three to five feet long; lives in rocky and woody places, feeds on insects and vegetables, is easily tamed, and follows mankind like a dog; inhabits India, the warmer parts of America, and the adjacent islands; its general colour green; flesh reckoned delicious.

The *Palustris*, or Warted newt, has a blackish body, sides speckled with white; belly orange with black spots; back of the male with a blackened crest, irregularly serrate; less than the water newt; inhabits the stagnant waters of our own country, and other parts of Europe.

The *Aquatica*, or Water newt, inhabits England and other parts of Europe, in pools, ditches, and stagnant waters; and dies in a short time if salt be sprinkled upon it. Three varieties: one with a roundish tail, middle sized; another brown, or yellowish, inhabiting France: another with dorsal line dotted with white and black, Germany.

The *Lacustris*, or Fenny newt, is black; seven other varieties. Inhabits the lakes of Europe, Martinico, or Ceylon; very destructive to fishes.

The *Salamandra*, or Salamander, has a short round tail; body porous, variegated with black and yellow; four other varieties. Inhabits Germany and many other parts of Europe; exudes from its pores a milky liquor, by which it is, for a short time, defended from the action of the fire. It is perfectly harmless.

The *Gecko*, or Gecko, is surrounded with warts, those of a larger size being encircled with smaller warts: inhabits India, Arabia, Egypt, and the warmer parts of Europe; frequents houses in summer, but is seldom seen in winter; makes a noise like a weasel, or like the sound of its own name; tame; emits a poisonous moisture from its feet, which, if accidentally smeared on food, produces, when eaten, a deadly colic.

The *Geitje*, with a variegated body, and lanceolate tail; is hardly three inches long; inhabits the Cape of Good Hope; the moisture exuding from its pores apt to produce dangerous gangrenes.

The *Chamæleon*, or Chameleon, has a cinereous body, and flat head; two other varieties; one white, the other with a very large head. Inhabits India and New Spain; lives chiefly in trees; the lungs enormous, which it can inflate to a vast size: eyes so moveable that it can look at the same time in different directions, pupil shining, golden; frequently changes its colour, varying it from its natural greenish or blueish grey, into a pale yellow; it is, however, by no means able to exhibit the great variety and contrast of colours at will, which has been commonly asserted of this animal. Body about ten inches long; tail nearly as long. It is perfectly harmless to man; feeds chiefly on insects, and can support very long abstinence.

The *Agilis*, Scaly lizard, or Green lizard, is, as its name imports, scaly, and of a greenish colour; nine other varieties. Inhabits England, and Europe at large, as far as the lake Baikal; one species found in America; is innocent, active, elegant; lives in dry meadows, walls, and rocks, easily tamed, and rendered familiar.

The *Velox*, or Swift lizard, inhabits sultry places, about the lake Inderskien; is exceedingly swift; resembles the scaly lizard, but is slenderer, and less.

The *Seps*, or Eft, having square scales: two other varieties: one variegated with chesnut; the other black-blue, marbled with confluent white bands, mixed with round spots.

The *Sputator*, or Spitting lizard, has a cinereous body, with white bands above, edged before and behind with liver colour; covered, except the top of the jaws, and the lower surface of the tail, with minute scales; two inches long; inhabits South America, in houses and old walls; when irritated, discharges a black acrid matter, producing inflammation of the skin, which is cured by camphor, or spirit of wine.

The *Scincus*, or Skink, has a round tail, middle sized, compressed at the top; toes unarmed, marginate: another variety, with a long tail; the whole body, with the head and tail, covered with imbricate scales. Inhabits Lybia, Egypt, and the rocky parts of Arabia; it was formerly kept in the dispensaries as an aphrodisiac.

The *Apus*, or Cylindriacal lizard, having the head, body, and tail, a continued imbricate pale cylinder; no fore feet, hardly any hind ones. Inhabits the grassy meadows of the deserts of Southern Siberia; in general appearance resembles a snake, in internal structure a lizard.

Lizard flower. See SATYRION.

Loach, or Loche. See GROUNDLING.

LOAM, a sub-species of the clay genus, and of a yellowish grey colour, frequently spotted, and brown. It occurs massive, is dull, and sometimes weakly glimmering. It adheres pretty strongly to the tongue, feels greasy, and is not very heavy; it is generally mixed with sand and gravel, and also iron ochre. See HUSBANDRY and SOIL.

Lobelia. See CARDINAL FLOWER.

Lob-grass. See BROOM GRASS.

Lobster. See CRAB.

LOCK, a well known and ingenious contrivance for fastening doors, chests, and the like, and which is generally opened by a key. From the different structures and purposes of locks, they have obtained various names: such as door locks, spring locks, rim locks, peg locks, plate locks, mortice locks, banbury locks, chest locks, drawer locks, cupboard locks, box locks, trunk locks.

The constituent parts of a lock, are the main plate; cover plate, and pinhole: to the first belong the key-hole, top-hook, cross-wards, bolt-toe, or bolt knob, draw-back, spring-tumbler, pin of the tumbler, and staples. With the cover-plate are connected a pin, mainward, cross-ward, and stop-ward, or dap ward; lastly, the pin-hole corresponds with the hook-ward, main-crossward, shank, pot, or beard, bow-ward, and bit. The wards of the key must of course be made to correspond.

Various patents have been obtained for the construction of locks, so as to prevent the possibility of picking them: the principal of these are BRAMAH's, SPEAR's, and STANSBURY's, but we cannot describe them.

LOCK, in inland navigation, a contrivance to confine the water in a canal, or other reservoir, and to permit vessels, barges, and boats, to pass from one level to another. Various patents have been obtained for canal locks, or improvements upon them. The last of this kind is by Mr. JOHN BOGAERTS, for raising and lowering water in canal locks, the particulars of which will be found in the London Journal of Arts and Sciences, for January, 1820.

Locked Jaw. See TETANUS.

LOCKED JAW, of HORSES, is

sometimes produced by wounds of the foot, or other parts, or by the operations of nicking, docking, or castration: very few cases are ever cured. The best remedy is large doses of opium and camphor, and blistering the spine of the back, from the withers to the tail. As long as the horse is capable of swallowing, wheat-flour gruel should be given.

Locust, in Entomology. See CRICKET.

LOCUST, in botany, a name vulgarly given to several different genera of plants. The principal are the following:

The Locust, Honey-flower, or *Melianthus*, is a genus consisting of three species, all Cape shrubs; the leaves and flowers are highly beautiful, and worthy of cultivation in our conservatories. They blossom in June, and are best propagated by cuttings, or layers, the seeds seldom ripening in England. The *major*, if shaken while in flower, discharges a shower of nectar.

The Locust-tree, or *Hymenea*, consists of three species, two natives of South America, one of Madagascar. Of these the *Carbaril*, an American tree, sixty feet high, and three in diameter, is the most worthy of notice. The leaflets are coriaceous, leaves stiff and smooth, standing in pairs, with peduncled flowers in panicles. The larger roots secrete a yellowish red transparent gum, which is the gum anime of the shops, affording an excellent varnish when dissolved in rectified spirit of wine.

The Honey locust, or *Gleditsia*, is a genus consisting of one species only, a native of Virginia and the West Indies. It rises, with an erect trunk, to the height of thirty or forty feet. It is propagated by seeds, which must be procured from the place in which the tree grows naturally, as it does not ripen its seeds in this country. It requires considerable care in its rearing and after management, and should be ultimately planted in a deep light soil, in a sheltered situation: for when much exposed to winds, its branches are frequently broken, in the summer season, in consequence of the weight of their leaves.

LOGWOOD, or *Hæmatoxylon*, in botany, a genus consisting of one species, a native of the bay of Campechy, at Honduras. It was introduced into Jamaica in 1715, and from its quick growth, is now in such abundance, as to incommode the land-holders in the neighbourhood of Savannah-la-mar. It is a tree rising from eighteen to twenty, or twenty-five feet in height, with crooked spinous branches, leaves abruptly pinnate; leaflets inversely heart-shaped, and flowers racemed. The wood of the tree is brought to this country in logs, which are afterwards chipped. Those pieces which are of a deeper colour are to be preferred. It is used in great quantities for many of the darker colours in dyeing.

It yields its colouring matter readily to water. See DYEING.

The colouring matter of logwood has been lately obtained from it by chemists, in a crystalline form, and of a reddish colour. It is called *Hematin*.

Logwood has been long employed in medicine, from its supposed *astringent* properties; but this is questionable. It however gives a general tone to the system, and thus, most probably, obviates the lax state of the intestines; it being given in diarrhœa, and in the latter stage of dysentery. Of a decoction, made by boiling two ounces of logwood chips in a pint and a half of water to a pint, one, two, or three fluidounces may be taken, and repeated according to circumstances. But it is more commonly given in the form of *Extract*, which is made by simply boiling logwood chips in water, and evaporating the water to dryness: the dose of the extract, which is usually in a hard brittle state, is from ten grains to half a drachm, dissolved in cinnamon water, or peppermint water.

In using logwood, either for dyeing, or medicine, the *chips*, and not the ground, or powdered logwood, should be chosen; as the latter article is very commonly adulterated with still cheaper woods.

LOGIC, the art of thinking justly, or of making a right use of our rational faculties; or of using reason well in our enquiries after truth, and in the communication of it to others. The art of logic, necessarily embraces an examination into the structure of the human mind, or at least so much of it as relates to its powers of comparing. In a work like the present, we cannot be expected to enter into a detail of this metaphysical subject; we may, however, observe, that most treatises on logic, are too full of words, and contain too few ideas, or at least ideas which can be of any practical utility, and hence the neglect, not to say opprobrium, into which this science has fallen. In all subjects relative to the human mind throughout this work, it has been our aim to avoid, as much as possible, all terms and expressions, which are not commonly understood; and we hope, that although we do not give here even a short treatise on logic, that many of our articles will insensibly, as it were, lead to a right use of reason. We shall close this short article, by merely giving an example or two of the figure in logic termed a *syllogism:*

Every number that may be divided into two equal parts, is an even number.

The number eight may be divided into two equal parts.

Therefore the number eight is an even number.

These are called propositions: the first the *major;* the second the *minor;* and the third the *consequent*, or conclusion: the whole, of course, a syllogism. Again:

Every virtuous man is worthy of esteem,
Sempronius is a virtuous man:
Therefore Sempronius is worthy of esteem.

London Pride. See SAXIFRAGE.

Long-legged spider. See SPIDER.

LONGEVITY, length of life: it is sometimes employed to denote the continuance of life beyond its ordinary duration. The term of human life does not in general much exceed eighty years, but it is well known, that instances occasionally occur of persons living considerably beyond the age of 100 years. We think, however, there can be no doubt, by carefully attending to health, and to a variety of circumstances on which health depends, that life may be, in numerous instances, considerably prolonged. See this subject treated more at large under the article LIFE. *The Code of Health and Longevity*, in four volumes, 8vo. by Sir JOHN SINCLAIR; a volume lately published by Mr. CARLISLE, entitled "*An Essay on the Disorders of old Age, and on the means of prolonging Human Life;* and the little, but old treatise of LEWIS CORNARO, *A Guide to Health and long Life*, may also be consulted.

LONGITUDE, the circumference of the earth, divided into degrees, measured from east to west, or from west to east. Latitude being the division of the circumference of the earth into degrees from north to south. See LATITUDE. The degrees of longitude, however, are of various lengths: at the equator, the earth being considered a perfect globe, they are of the same length as a degree of latitude, which is of the same length in every part of the world; but from the equator the degrees of longitude gradually diminish, till, at the poles, they vanish entirely.

LOOKING-GLASS, a plain glass mirror, which being rendered impervious to light, exhibits the images of such objects as are placed before it, apparently at the same distance behind.

Looking-glasses are made of plate glass, cast and ground. See GLASS. The making of looking-glasses is a particular branch of business, and generally, we believe, a very profitable one.

The foliating of looking-glasses, or the spreading of the plates over, after they are polished, with amalgam, in order to reflect the image, is performed thus:—

A thin blotting paper is spread on the table, and sprinkled with fine chalk; and then a fine lamina, or leaf of tin, called tin foil, is laid over the paper; upon this mercury is poured, which is to be distributed equally over the leaf with a hare's foot, or cotton; over this is laid a clean paper, and over that the glass plate, which is pressed down with the right hand, and the paper drawn gently out by the left; this being done, the plate is covered with a thicker paper, and loaded with a greater weight, that the superfluous mercury may be driven out, and the tin adhere more closely to the glass. When it is dried the weight is removed, and the looking-glass is complete. Some add an ounce of marcasite, melted by the fire; and, lest the mercury should evaporate in smoke, pour it into cold water; and, when cooled, squeeze it through a cloth or leather. Some add a quarter of an ounce of tin and lead to the marcasite, that the glass may dry the sooner.

Looking-glass plant, or *Heriteria*, a genus consisting of one species, an East Indian tree, having dry drupes, with one sub-globular seed.

Looking-glass, Venus's. See **Bell Flower.**

LOOM, the weaver's frame, a machine whereby several distinct threads are woven into one piece. The loom is of various structures according to the several kinds of materials to be woven, and to the method of weaving them. The *warp* is the threads, whether of silk, wool, linen, cotton, &c. which are extended lengthwise on the loom. The *woof* is the thread which the weaver shoots across the warp, by means of a little instrument called a shuttle, which is thrown alternately from right to left, and from left to right across and between the threads of the warp, which are made to move up and down alternately, for the purpose, by treadles operated upon by the foot. The improvements in, and patents for looms are almost innumerable.

Looseness. See **Diarrhœa** and **Dysentery.**

LOOSE-STRIFE, or *Lysimachia*, a genus of plants comprehending twenty species, natives of Europe, Asia, and America, four common to the wet meadows, wet woods, and moist shades of our own country. Four or five species are propagated in our gardens, and are hardy herbaceous triennials and perennials, rising with erect stalks from a foot and a half to three feet high, terminating with spreading white flowers. The *nummularia*, called also money-wort, affords a wholesome food for cattle.

Another genus, *Lythrum*, under the name of loose-strife, willow-herb, or London-strife, is also known. It consists of sixteen species, chiefly natives of the West Indies and South America; a few of Europe, and two common to the wet pits and river banks of our own country. The *accuminatum*, a native of Siberia, is often cultivated in our gardens, and is a gaudy flower in July and August. The *salicaria*, or Purple loose-strife, an indigenous perennial, affords considerable tanning matter.

LO-QUAT, a species of medlar, growing in Japan and the East Indies. See **Medlar.**

Lords and Ladies. See **Cuckow-Pint.**

LOTE-TREE, **Nettle-tree**, or *Celtis*, a genus consisting of six species, all American or West Indian plants, except the *orientalis*, which is a native shrub of the Levant, rising about twelve feet high, and ornamented with yellow axillary flowers on slender pedicles. The *occidentalis*, a native of Virginia, is of considerable height and utility. The leaves are of a bright beautiful green, and continue without falling off, till very late in the autumn. The trunk is used by coach-makers for their frame work; and the branches by musical instrument-makers, for flutes, pipes, and similar wind-instruments.

LOTE-TREE, or *Zizyphus lotus*, one of the ten species of the genus *Zizyphus*, or jujube tree; eight of which are prickly; two unarmed. They are natives of the south of Europe, the East Indies, or Carolina. The following are the chief:

The *Lotus*, or Lote-tree, with prickles double; a shrub with weak flexuous branches, and axillary flowers. This is the true Lotus of the ancients.

The *Paliurus*, or Christ's thorn, with double prickles. This is supposed to be the plant from which the crown of thorns was made, that was put round the head of Jesus Christ at his crucifixion.

The *Jujube*, with solitary and recurved peduncles, leaves roundish-ovate, and flowers half two-styled.

The *Vulgaris*, or common jujube, with double prickles.

The whole of this genus approach the *rhamnus*, or buck-thorn, and, by old botanists, are included under it.

LOTION, literally a washing, but in medicine and pharmacy, a preparation to be applied to the surface of the skin, in order to clean it from some disease or foulness, &c.

LOTTERY, a game of hazard, in which small sums are adventured for the chance of obtaining a larger value, either in money or other articles. All lotteries, as being gambling transactions, are highly immoral and improper, from which the public lotteries, drawn by authority of the government of any country, are not exempt.

LOVAGE, or *Ligusticum*, a genus comprehending fourteen species, all European plants, three common to our own country. The *Lævisticum* was formerly employed as a medicine in dyspeptic complaints, but is scarcely heard of in modern practice. It is sometimes eaten as a salad, or boiled as greens.

LOVE, in its most extensive signification, implies benevolence, or that universal disposition of kindness and goodwill which consults the happiness of the whole human race: in this sense it is the same as philanthropy, comprehending the whole circle of social and moral virtues. The love existing between near relations or friends, is commonly termed affection, and the highest degree between the sexes passion.

The passion of love is of a compound nature, much of which depends upon the vividness of the imagination, and particularly the imagination of youth and early manhood. It is often slow in its progress; sometimes sudden and intense; and if *opposed*, generally most deplorable in its effects. This passion, when intense and of the purest kind, and when felt equally by both objects who are the subjects of it, imparts the most exquisite degree of happiness which, perhaps, can be found upon the earth; but as the union of mental and personal accomplishment necessary to constitute such happiness is rare, and we may say for a long continuance almost impossible, so we find that the love which the imagination of youth so energetically and fondly depicts, too often ends in indifference, disgust, or disappointment. As moralists it is our duty to state these truths, and to state also that it appears to us that the error in most persons who feel disappointment in after life relative to this passion, originates in the too high expectations with which they set out; and that both parties are generally too selfish. Far be it, however, from us to chill those genial currents which glide in the smooth channels of domestic love beside the hearth of home, where

> "The heart
> Leaps kindly back to kindness;—
> Where love is pure and far above disguise,
> Standing the test of mortal enmities,
> Still undivided and cemented more,
> As frown the gathering perils of the world!"

The indulgence of the passion of love, where inequality of rank, education, fortune, and accomplishments, render its consummation ineligible, cannot be too sedulously guarded against: for want of prudence in this respect, many a worthy mind has been made miserable. And let it never be forgotten, that the approaches of this passion are commonly slow, silent, and unseen, till retreat becomes dangerous, often cruel, and, to one or both of the parties, not unfrequently unjust. Parents and others, whose province it is more immediately to watch over the affections of young persons, should be exceedingly circumspect as to the society in which they mingle, and the connexions which they form. We are sorry to observe, that too often carelessness, in the first instance, is very commonly accompanied with cruelty in the last.

We know not what advice to give to those persons who are said to *fall in love* with an object at first sight: genuine love cannot exist without esteem; that object with which we are not acquainted, cannot be esteemed: such love is, we conclude, therefore, a species of madness, of which the sooner the patient is cured the better.

Love-apple. See NIGHTSHADE.

Love-in-a-mist. See PASSION FLOWER.

LOVE-LIES-BLEEDING, or *Amaranthus caudatus*, is one of the twenty-eight species of the genus AMARANTHUS, amaranth, or flower gentle; some of which are common to Europe, others to Asia, others to America, and the *blitum*, or wild amaranth, to our own country. The *hypochondriacus*, or prince's feather, is a native of Virginia; the *oleraceus*, or esculent amaranth, as well as several other Indian species, is eaten in the east in the same manner as cabbages among ourselves. The *caudatus*, the first-mentioned species, is also an Indian plant, but well known in our flower gardens, and propagated with a small share of attention.

LOVE, TREE of, or *Cercis*, in botany, a genus consisting of two species, having papilionaceous flowers and oblong pods; the *siliquastrum*, having orbicular heart-shaped leaves, is a native of Italy and Spain; and the *canadensis*, is a native of Virginia.

LOUSE, or *Pediculus*, a genus of insects comprehending sixty-six species, about half of them common to our own country, and found on the bodies of man, quadrupeds, birds, and the larger insects. They live by extracting the animal juice. It is highly probable that, although not more than sixty-six species have yet been classified, there is no tribe of quadrupeds or birds which is not infected with a peculiar pediculus. Their specific names are derived from the animal which they inhabit, hence we trace the *humanus*, the *suis*, the *ovis*, the *anseris*, &c. Man appears to be infested with three distinct species, as follow:—

The *Humanus*, or Common louse, found in the heads and on the garments of dirty persons, and especially boys.

The *Pubis*, or Crab louse, found on various parts of the body of dirty persons.

The *Ricinoides*, with a reddish body, inhabits America, and gets into the legs of the naked inhabitants, where it draws blood, and depositing its eggs in the wound, occasions foul and malignant ulcers.

The chief remedy for the annoyance of these insects is cleanliness; and it rarely happens that where general personal cleanliness is attended to, that any other method is necessary. When, however, other means are required, a strong decoction of tobacco may be used; but the most effectual is the common mercurial ointment; or a more elegant one may be made by rubbing one drachm of the white precipitate of mercury with one ounce of lard. Mercurial applications to the head, or other parts, should be, however, applied with extreme caution. Powdered staves-acre seed is also sometimes used for the purpose of extirpating these troublesome animals.

Louse-Berry. See SPINDLE-TREE.

LOUSE-WORT, or *Pedicularis*, a genus comprehending thirty-four species, almost all European plants, two the *palustris*, or marsh louse-wort, and the *sylvatica* or common louse-wort, indigenous to this country; the first is a troublesome weed, and, if accidentally swallowed by cows among other grasses, occasions bloody urine. The expressed juice, or a decoction of the last is said to be advantageously employed as an injection to sinuous ulcers.

Low-spirits. See HYPOCHONDRIASIS.

LOZENGE, a form of various medicines moulded into small flat cakes, commonly round, designed to be held in the mouth or chewed till they are dissolved. The principal use of lozenges is for those complaints in which the throat and fauces are more immediately affected. They operate either by obtruding the acrimony of the secretion of those parts, by increasing their action, or by allaying the irritation. There are, however, few cases in which medicines thus administered may not be given in a more effectual manner. The term lozenge is very convenient in the vocabulary of the quack.

LUCERN, or *Medicago sativa*, one of the thirty-seven species of the genus MEDICAGO, which are almost all natives of the south of Europe, four common to the pastures and sandy soils of our own country. They are thus subdivided:

Legumes crescent-shaped, more or less twisted; comprising nine species, all denominated moon-trefoil:—Legumes spirally twisted, comprising the rest, and denominated medich.

Of these the only species particularly worth notice is the *sativa*, or lucern, belonging to the first division, and is specifically charactefised by having its peduncles racemed; legumes smooth spirally twisted, stipules very entire, leaflets oblong toothed; it flowers in June. It is sometimes found growing naturally in meadows and pastures. But it was introduced from France to this country in the 17th century. As a green fodder it has of late years been very generally recommended, and very successfully cultivated by our graziers.

This valuable grass requires a dry and rich soil, which must be thoroughly cleaned by two or three previous green crops of tares, turnips, or cabbages. It may be sown either broad-cast, which is the usual method, or drilled nine inches apart, between rows of barley equally distant. It is better to sow it with barley or oats thinly seeded, both on account of the profit of the crop, and as the grain furnishes some protection to the plant from the attacks of the fly. If drilled, from 12 to 15lbs. of seed per acre will do; but if sown broad-cast, not less than 20lbs. It may often be cut four times a year. Lucern is said to be much superior to clover for soiling milch cows; one acre is sufficient for three or four cows during the soiling season. In rich land a quarter of an acre will be sufficient for all sorts of large cattle, taken one with another; but on moderate soils half an acre per head is the proper allowance. It requires, during its growth, to be kept thoroughly clean, by hand-hoeing and scarifying between the drills. All other grasses in the rows should be carefully plucked out.

Lues Venerea. See Gonorrhœa and Syphilis.

LUMBAGO, a rheumatic affection of the muscles about the loins. See Rheumatism.

LUMINOUS SUBSTANCES. Various animal and vegetable substances have a power of emitting light under particular circumstances. Some of them while living, and others not till after death.

That light occasionally proceeds from putrescent animal and vegetable substances was noticed by Aristotle; but such phenomena have been more accurately observed by the moderns, although the causes of them do not, even now, appear to be certainly known. Putrid flesh, fish, and of these lobsters and crabs, the froth of the sea, and decayed wood, yield in the dark a considerable degree of light, but it is not, in general, accompanied with any sensible heat. The most probable solution of these phenomena is, that in most instances they arise from a slow developement and weak combustion of phosphorus, or phosphoric matter.

Lump-fish. See Sucker.

LUNACY, a kind of madness, supposed to be influenced by the moon; it means, however, more commonly, the same as insanity, which see; see also Mad-House.

Lunar caustic. See Silver.

LUNG-WORT, or *Pulmonaria*, a genus of plants comprising seven species, natives of Europe and America: two of our own country. The three following are cultivated; the *officinalis*, Common, or spotted lung-wort, Jerusalem cowslips, or Jerusalem sage; the *angustifolia*, or Narrow-leaved lungwort; the *virginiana*, or Virginian lungwort, with blue, red, and white flowers, appearing in April, is a native of North America. These plants are propagated by seeds, or by parting the roots.

LUNGS, or *Pulmones*, in anatomy, two viscera, situated in the chest or thorax, by means of which we breathe. The lung in the right cavity of the chest is divided into three lobes, that in the left cavity into two. They hang in the chest attached at their superior part by means of the trachea, or windpipe, and are separated by the mediastinum. They are furnished with innumerable cells, which are formed by a continuation of the trachea, the bronchial tubes of which communicate with each other: the whole appears not unlike a honey comb. The internal surface of the air-cells is covered with a very fine, delicate, and sensible membrane, which is continued from the larynx through the trachea and bronchia. The arteries of the lungs are the bronchial, a branch of the aorta, which carries blood to the lungs for their nourishment, and the pulmonary, which circulates the blood through the air-cells, to undergo a certain change. The pulmonary veins return the blood that has undergone this change, by four trunks, into the left auricle of the heart. See ANATOMY, ARTERY, and HEART.

The most important use of the lungs is for the process of respiration, by which the circulation of the blood appears to be immediately supported; and, doubtless, by their alternate inflation and collapsing, they contribute, with the diaphragm, to the various functions of the abdominal viscera, such as digestion, &c.

The lungs are subject to various disorders, such as Asthma, Catarrh, Cough, &c., the treatment of which will be found under their respective heads: we shall here only treat of

Inflammation of the lungs, or *Pneumonia;* under which last term all inflammations of the thoracic viscera, or membrane lining the inside of the thorax, have been systematically comprehended. The symptoms of these inflammations do not, in general, enable us to distinguish, with accuracy, the particular seat of the disorder; nor does a difference in the situation of the affected part make any difference in the cure. We shall, therefore, here treat not merely of the inflammation of the lungs, but also of the disease commonly termed PLEURISY, which is an inflammation of the pleura, a membrane lining the internal surface of the thorax, covering its viscera, and forming also the mediastinum.

This inflammation, however various in the seat, is always distinguished by fever, difficult breathing, cough, and pain in some part of the thorax. It is almost always preceded by a cold stage, although in a few instances the pulse may not be more frequent, nor the heat of the body increased beyond what is natural. The pulse, for the most part, is frequent, full, strong, hard, and quick; but in an advanced state of the disease, it is weak, soft, and irregular. The cough is more or less urgent or painful; sometimes dry, but more commonly moist; the matter spit up varying both in consistence and colour, and frequently streaked with blood. The pain is also different in different cases. For the most part it is fixed to one spot; and is generally greater when the patient lies on the side affected, although sometimes the contrary happens.

One of the chief causes of this complaint is, cold applied to the body in various forms, and afterwards a sudden exposure to a hot or warm temperature: but a predisposition, or inflammatory state of the system, seems also, at the same time, necessary to induce the disease; and therefore it is said, that the persons principally affected with this disease; are those of the greatest vigour, in cold climates, in the winter season, and particularly in the spring, when the vicissitudes of heat and cold are frequent. But exceptions to even this generally received doctrine will occasionally be found. What has been said under the article CATARRH, in order to guard against an attack of this disease, should be, however, most carefully attended to.

This complaint is almost always attended with considerable danger, and therefore, if possible, the best medical advice should be at once obtained.

In the cure, the general mode of treatment must be the same as that mentioned under *inflammatory fever*. See FEVER. But *bleeding* is the remedy to be chiefly depended upon, and the quantity of blood taken away ought, in general, to be as large as the patient's strength will allow. Sixteen ounces from a male adult, is a full bleeding, any quantity below twelve ounces a small bleeding, and any quantity above twenty ounces a large bleeding. An evacuation of four or five pounds in the course of two or three days is generally as much as most patients will bear. Besides the evacuation of blood-letting, considerable abstinence will be also necessary; and the patient should be kept as cool as possible, consistent with the means taken to promote perspiration. Blisters may sometimes be usefully applied to the part affected; and saline purgatives should not be omitted.

This disease often terminates favourably by a spontaneous sweating; and if, after some remission of the symptoms, spontaneous sweats arise, they may be encouraged, but without the introduction of much heat, and without stimulant medicines.

When this complaint terminates fatally, it is usually on one or other of the days of the first week from the commencement of the attack from the third to the seventh. If the disease continue beyond the fourteenth day it will terminate in a suppuration, or in PHTHISIS. See *Pulmonary Consumption.*

LUNGS, INFLAMMATION of, in HORSES. The causes of this complaint are a sudden transition from heat to cold, or the contrary; exposing a horse when over-heated by exercise, to rains or cold winds; or allowing him to drink freely of cold water when in that state; taking a horse from grass and putting him suddenly into a warm stable and giving him large quantities of oats; excessive exertion may also be named as a cause of this complaint. The symptoms are, a dull look, hanging down of the head, and indifference to food; to which succeeds a quickness of breathing, and the inner surface of the eyelids is unusually red. The pulse, which in health is about forty in a minute, will be found from eighty to a hundred. If the disease be not properly treated, the symptoms increase, and it is sometimes so rapid, that the first or second day it becomes incurable. Bleeding is here the chief remedy. Five or six quarts should be taken at once. The blood should be preserved; for if it be found sizy, and with the buffy coat, the propriety of the operation is indicated, and that it should be repeated in a few hours, if a continuance of the symptoms render it necessary. A clyster, and a dose of laxative medicine should also be given; afterwards the following ball twice a day: Nitre six drachms, tartarized antimony two drachms; flour, and syrup enough to form a ball. Should these balls bring on profuse staling, they are to be discontinued for a day or two.

The horse should be turned loose in a place moderately warm, and where he is not exposed to a current of air. In summer he may be allowed grass vetches, or other green food. When the disease is subdued he should have oatmeal gruel, or infusion of malt.

This complaint sometimes begins in the mucous membrane of the throat, the wind-pipe and its branches; in this case there is a cough, watery eyes, and a discharge from the nostrils; but the pulse and breathing are not so quick as in the preceding complaint. *Early* bleeding is here, however, the essential remedy, with good nursing, steaming the head, clothing both that and the body, and giving the nitre balls as above.

LUPINE, or *Lupinus*, a genus of plants, comprehending nineteen species, natives of Europe, Asia, America, and one of the Cape. They are all hardy annuals, ornamented with long whorled spikes of papilionaceous flowers, white, blue, yellow, and rose-coloured. They are easily raised from seeds, and make a handsome appearance in open borders.

LUTE, in chemistry, clay, or substances of similar tenacity, used to close the joinings of vessels, in order to prevent the escape of vapours and gases during the process of distillation, sublimation, and the like; or to protect vessels from the immediate action of the fire; or sometimes to repair flaws or other imperfections.

To prevent the escape of the vapours of water, spirit, or liquors not corrosive, the simple application of slips of moistened bladder, will answer very well for glass vessels; and slips of brown paper, with a stiff paste, made with flower and water mixed cold, for metals, such as still-heads, &c. The bladder, to be very adhesive, should be soaked some time in warm water, till it feels clammy. If smeared with white of egg instead of water it adheres still closer.

Linseed-meal, moistened with water to a proper consistence, well beaten, and applied pretty thick over the joinings of the vessel, is another very convenient lute. Almond paste answers also the same purpose. But these will not do as *fire lutes*. The following is a good fire-lute: Take some whites of eggs, with as much water, beat them well together, and sprinkle in sufficient slacked-lime to make up the whole to the consistence of a thin paste. The lime should be slacked by being once dipped in water, and then suffered to fall into powder. This cement should be spread on slips of cloth, and applied immediately. A solution of glue may be used instead of the white of eggs. A mixture of liquid glue, white of eggs, and lime, makes a lute so firm that broken vessels united with it are almost as strong as when sound. None of these lutes will, however, enable vessels to hold liquids for any great length of time.

For confining acid vapours, the *fat-lute*, made with good clay, or tobacco-pipe clay powdered, and mixing it with drying linseed oil, and then beating them for a long time to the consistence of a thick paste, is one of the best.

A lute to be applied round glass retorts to protect them from the immediate contact of the fire may be made thus: Mix sand with a sufficient quantity of clay to make it adhere together, and beat them up with some fibrous material so as mechanically to increase the tenacity. Windsor loam, and horse-dung are of this kind; but chopped straw, chaff, cow-hair, or tow, mixed with the clay and sand, will answer the same purpose.

Isinglass dissolved in vinegar to a thick consistence, is an excellent lute for labels of bottles, &c.: it should be warmed when used.

Luxation. See DISLOCATION.

LUXURY, an extravagant indulgence in whatever pleases the senses, such as the articles of food, dress, and equipage. Luxury, in a still more extensive signification, implies an indulgence in excessive pleasure of any kind: thus there are mental, as well as sensual luxuries.

To enlarge on the injurious consequences of luxury, cannot surely be necessary; they are well known to be extremely baneful both to our physical and intellectual well-being. One of the first of virtues, is the practice of *moderation* in all our pursuits: for nothing violent, or excessive, can be lasting. He, therefore, who expects a long continuance of the enjoyment of excessive pleasure, whether sensual or intellectual, expects what is not within the power of human nature to impart.

LYCHNIDEA, BASTARD LYCHNIS, or *Phlox*, a genus of North American plants consisting of twelve species. The following are cultivated: the *paniculata*, or Panicled, the *suaveolus*, or White-flowered, the *maculata*, or Spotted-stalked, the *pilosa*, or Hairy-leaved, the *carolina*, or Caroline, the *glaberrima*, or Smooth, and the *divaricata*, or Early-flowering lychnidea. The plants of this genus have perennial roots with herbaceous stalks, from nine inches to two feet in height, adorned with tubulated flowers of a white or purple colour. They are propagated by offsets, and will bear the winter of our own country.

LYCHNIS, or CAMPION, in botany, a genus of plants comprising eleven species, chiefly European; a few Asiatic; three common to the dry rocks or wet meadows of our own country. The following are the chief: lychnis, with flowers gathered into a pyramid, commonly called Scarlet lychnis; lychnis, with quadrifid petals, commonly called Ragged robin; lychnis, with entire petals, or Single catch fly; lychnis with male and female flowers on different plants, or Bachelors buttons. The several species of this plant are perennial, and much cultivated in our gardens for the appearance of their flowers. They are very hardy and easily propagated, either by parting the roots or by seed. They should be parted the latter end of August, the seed should be sown in March.

Lying in. See MIDWIFERY and PARTURITION.

Lymph, coagulable. See ALBUMEN and BLOOD.

LYMPHATICS, in anatomy, absorbents which convey a transparent fluid or lymph. They are small transparent vessels, which originate in every part of the body. With the lacteal vessels of the intestines they form what is termed the *absorbent system.* Their termination is in the thoracic duct. See ANATOMY and THORACIC DUCT.

The office of these vessels is to take up substances applied to their mouths: thus the vapour of circumscribed cavities, and of the cells of cellular membranes, are removed by the lymphatics of those parts; and thus mercury and other substances are taken into the system when rubbed on the skin.

Lynx. See CAT.

M.

MACACO, MACAUCO, or *Lemur*, a genus of mammalian animals, consisting of thirteen species, inhabiting Asia, Africa, and America: they are distinguished by having four upper fore teeth, the intermediate ones being remote; the lower six longer, extended, compressed, parallel, and approximate; the grinders many, subolate, foremost longer, sharper. The following are the principal:

The *Ecaudatus*, or Tailless macauco, having small head and ears, a sharp-pointed nose; eyes surrounded with a white space, encircled with a black ring; body covered with a short, soft, silky, ash-coloured, reddish fur; toes naked, with flat nails; length sixteen inches. Inhabits Ceylon and Bengal; lives in the woods, on fruits and seeds; creeps slowly on the ground; makes a plaintive noise.

The *Tardigradus*, or Loris, is tailless; body brownish ash; back with a brown line; face hairy; hands and feet naked; teats, two on the breast, two on the upper part of the belly; size of a squirrel; inhabits Ceylon, agile, quick of hearing; monogamous.

The *Mongor*, Mongor, or Woolly macauco, is the size of a cat; when in full health, the whole upper part of the body covered with long, soft, thick fur, a little curled, or waved, of a deep brownish ash-colour; tail very long; breast and belly white; inhabits Madagascar; turns its tail over its head to protect it from rain; feeds on fruits, and sleeps on trees; good-natured and sportive, but very tender; found also in Celebes and Macassar.

The *Macao*, or Vari, is tailed, black; collar bearded; three other varieties: brown, white, and black and white mixed. Very fierce in a wild state, and makes so violent a noise in the woods, that it is easy to mistake the noise of two, for that of two hundred; when young, and tamed, very gentle and good-natured; hind legs and thighs, like the two preceding species, are very long; inhabits Madagascar.

The *Prehensilis*, or Little macauco, has a prehensile tail, size less than the black rat; body above ash-coloured, beneath white; head round, nose sharp, whiskers long; two canine teeth in each jaw; ears large, roundish, naked, and membranaceous; tail as long as the body.

The *Volans,* or Flying macauco, is about three feet long, and as broad; very distinct from, yet resembling the bat and flying squirrel; inhabits the country about Guzerat, the Moluccas, and the Philippines; feeds on the fruit of trees; called by the Indians Caguang, Colugo, and Gigua; head long; mouth and teeth small; from the neck to the hand extends a broad skin, like that of a flying squirrel; the same is continued from the hind feet to the tip of the tail, which is included in it; the body, and outside of the skin, covered with soft hair, hoary, or black, and ash colour; tail slender, about a span long.

Macao, or Macaw, in ornithology. See PARROT.

MACARONI, a kind of dried paste, imported from Italy, in the shape and size of a tobacco-pipe stem; it appears to be nothing more than pure flour, or some such farinaceous matter; its nutritive qualities are, of course, of a similar kind.

MACAROON, a sweet-meat, made of flour, almonds, eggs, and sugar. The same objection applies to this article, as food, as to COMFITS and GINGERBREAD, which see.

Macaw-tree. See COCOA.

MACE, a well-known spice, attached to the shell of the nutmeg. See NUTMEG.

Mace-reed. See CAT'S TAIL.

MACERATION, in pharmacy, implies an infusion, either with or without heat, wherein the ingredients are intended to be more or less dissolved, in order to extract their virtues.

MACHINE, in a general sense, signifies any thing which serves to increase, or to regulate moving powers. In a more confined sense, the term is applied to many apparatus, in which considerable art and ingenuity are exercised in their construction, and by which many things are effectuated, which without their assistance would be difficult, and in some instances impossible. Thus we have a threshing-machine, a winnowing-machine, an electrical machine, &c. See the next article.

MACHINERY, a combination of wheels, levers, &c. &c., capable of a variety of mechanical movements, by which, with the aid of wind, water, steam, or animals, human labour is abridged, and at the same time a greater and effectual increase of power is obtained.

The great irksomeness of long-continued labour, and the great difficulty of effectuating certain objects by mere bodily strength alone, have tempted mankind to seek for relief from the first, and for means to accomplish the last. In the present age, such has been our rapid advancement in the important knowledge and uses of machinery, that it has become a problem with many persons, whether this knowledge be a blessing or a curse: on the one hand, the facility with which articles of clothing, &c. &c. are supplied by machinery, demonstrates how little human labour is necessary; whilst on the other, so many persons are thrown out of employment, or employed at such reduced wages, that what they earn is by no means adequate to supply their daily, and most pressing wants: hence, a large portion of the community hangs, as it were, a dead weight upon the rest, and are supported by, the worst of all means of support, the poor's rates.

These evils of machinery are great and weighty; but we think, notwithstanding, that machinery may be made the means of contributing most effectually to the happiness and well being of man. The fault does not lie in the use of machinery itself, but in its misdirection. Let WISDOM, WEALTH, and BENEVOLENCE unite, and a fairer prospect must unfold for the future inhabitants of these realms, and also for the whole world.

MACKAREL, or *Scomber*, a genus of fishes, consisting of twenty-two species, inhabiting the European, American, Atlantic, and Mediterranean seas.

It has a smooth compressed head; gills membrane, with seven rays; body smooth; lateral line carinate behind;

between the dorsal fin and tail, are frequently several spurious fins. They may be thus sub-divided: spurious fins distinct; without spurious fins; spurious fins connected. The following are the chief:

The *Scomber*, or Common mackarel, has five spurious fins; inhabiting the European, American, Atlantic, and Mediterranean seas; from one to two feet long; body above the lateral line, dark green, varied with blue, and crossed with black lines; beneath, silvery. When just taken out of the water, emits a phosphoric light, and soon dies.

This is one of those tribe of migratory fishes, which annually visit our coasts, and is perhaps amongst the most celebrated of that class, both for its numbers, and the delicacy of its food. But although the most palatable of the gregarious fishes, owing to its extreme tenderness, it will not well bear carriage. It may, however, be pickled and preserved; and from some late experiments on the preservation of fish by the PYROLIGNOUS ACID, see that article, we may hope that the preservation of these fish may be rendered very effectual.

The *Thynnus*, or Thunny, has from eight to eleven spurious fins; inhabits most seas, and is from two to ten feet long; body spindle shape, silvery, above steel blue, and a little convex; swims with great swiftness, and periodically frequents the shores of the Mediterranean, which they enter from the Atlantic in vast shoals, making a prodigious hissing. An extensive thunny fishery was carried on by the ancients in the Mediterranean; and the trade is still in activity: when taken, the fishes are cut into pieces, and salted up in barrels, in which state they are exported to the neighbouring countries. The abdomen is reckoned the most delicate part; it is cut up and sold separately to the wealthy citizens of Rome, under the name of taremtello.

The thunny frequents also the English coast, but not in such numbers as in the Mediterranean; it is also found on the western coast of Scotland, where it comes in pursuit of herrings. The flesh of this fish, when fresh, has the appearance of raw beef; after boiling it turns pale, and tastes like salmon. It is said to be sometimes poisonous. The thunny spawns in May or June. Some of these fish grow to an immense size, weighing above four hundred pounds.

The *Trachurus*, Scad, or Horse mackarel, inhabits the European, American, and Pacific seas; from a span to two feet long; body silvery; front and back mixed with green and blue; flesh eatable, but tough; found frequently on our own coasts.

The *Chrysurus*, or Yellow tail, has the spurious fins, pale yellow; mouth without teeth; inhabits Carolina.

Mad apple. See SOLANUM.

MADDER, or *Rubia*, a genus of plants, comprehending seven species, scattered over the globe; one the *peregrina*, common to the hedges of our own country.

The only cultivated species is the *tinctorum*, or Dyer's madder. It is a native of the south of Europe, the Levant, and Africa, a perennial, with annual stems, which are quadrangular, jointed, procumbent, having rough, short, hooked points, by which they are supported on the neighbouring plants. The leaves are in whorls, of four or five, elliptical, pointed, about three inches long, and, in the middle, nearly one broad. The flowers, which appear in June, are yellow, and are succeeded by black berries. The root, which is used extensively for dyeing red, is dug up the third summer of its growth. It is then dried gradually in a stove, built in the form of a tower, with several floors; and from the uppermost it is progressively removed to the lowest; after which it is threshed to remove the cuticle, and then dried completely in a kiln. When perfectly dried, it is ground to a powder, and finally packed in barrels for the market. Madders of various qualities are found in commerce: *mull*, *gamene*, *crop* madder, &c. Crop madder is the best.

As this is an article of great national importance as a dyeing material, many attempts have been made to cultivate it in this country, but without success, the Dutch madder being both better and cheaper than ours. That it can be grown to great perfection here is, however, certain, and the efforts to introduce its culture should not be dropped.

For the uses of this root as a dye, see DYEING.

Madder is usually regarded in medicine as an emmenagogue, and it has been also recommended in jaundice, and the atrophy of infants, but its efficacy is extremely problematical. The colouring matter, however, is carried into the circulation, tinging the urine a blood-red colour, and is deposited even in the bones. The dose of madder root, if taken internally, may be from fifteen grains to a scruple, united with sulphate of potash, and given three or four times a day.

Madder is occasionally given to cattle; but we are not aware that it can be of any service.

Mad dog. See BITE of a MAD DOG, and HYDROPHOBIA.

MAD-HOUSE, a house where persons afflicted with insanity are kept, either for safety, or to be cured.

No person, on pain of 500l., shall entertain, or confine, in any house kept for the reception of lunatics, more than one lunatic at one time, without a license to be granted yearly by the College of Physicians within London and Westminster, and seven miles thereof, and within the county of Middlesex, and elsewhere by the justices in sessions. 26 Geo. 3. c. 91.

Perhaps a more responsible and weighty trust cannot devolve upon any human being, than that which rests upon the keeper of a mad-house. Not only will his humanity, but his integrity be sometimes put to the severest trials. Nor can we too strongly caution the relations of a maniac, to be extremely circumspect as to the character and disposition of the person into whose care they are about to commit their mentally diseased friend: for when he is once within the walls of an asylum of this kind, it may either prove the means of fortunate restoration to sanity, or, sad alternative, a living tomb. See INSANITY.

Madnep. See COW PARSNIP.

Madness. See INSANITY.

MADREPORE, or *Madrepora*, in zoology, a genus of the class worms, order zoophyta, the animal resembling a medusa, corol lamellate with star-shaped cavities; one hundred and eighteen species scattered through the seas of the globe, four common to our own country. They may be thus subdivided: composed of a single star; with numerous separate stars and continued gills; with numerous united stars; aggregate undivided, with distinct stars and porulous, tuberculous, prominent, undulations: branched with distinct stars and tuberculous, porulous, undulations. The *verrucaria*, with an orbicular star, flattish and sessile, with a convex disc, full of pores and radiate border, inhabiting the European, Mediterranean, and Red Seas, adhering to marine vegetables, size of a split pea, colour white or yellowish, is an example of the first division. The *pileus*, without stem, with longitudinal rows of concatenate stars, inhabiting the Indian ocean, is an example of the second. The *cerebrum*, or Brain-stone, nearly globular, from two inches to two feet in diameter, habitation not known, an example of the third.

MADWORT, or *Alyssum*, a genus of plants comprising thirty-three species, chiefly inhabitants of Europe, of which the *sativum*, or Common madwort, is indigenous to our country, and is found wild in our corn fields.

Magazine. See PERIODICAL PUBLICATIONS.

MAGGOT, the common name of the fly worm, found in the flesh of both living and dead animals. Maggot also implies any small worm of a similar kind.

MAGISTERY, an old chemical term nearly synonymous with precipitate, but now rarely used except in *magistery* of bismuth or pearl white, which is an oxide of bismuth.

MAGNA CHARTA, or the GREAT CHARTER of the liberties of Britain, and the basis of our laws and privileges. It was signed by King John, in presence of the Barons at Runneymede, in 1215; and confirmed by the succeeding monarchs, Henry the third and Edward the first.

This charter confirmed many liberties of the church, and redressed many grievances to foedal tenures of no small moment at the time, although now they may appear trifling. But besides these the subject was protected against various other oppressions. It fixed the forfeiture of lands for felony in the same manner as it still remains: prohibited for the future, grants of exclusive fisheries, and the erection of new bridges, so as to oppress the neighbourhood. Relative to private rights it established the testamentary power of the subject over part of his personal estate, the rest being distributed among his wife and children; it laid down the law of dower as it has continued ever since; and prohibited the appeals of women, unless after the death of their husbands. It enjoined a uniformity of weights and measures; gave new encouragement to commerce by the protection of merchant-strangers, and forbad the alienation of lands in mortmain. It prohibited all delays in the administration of justice, fixed the court of Common Pleas at Westminster, and at the same time directed that annual circuits of assize should be held in the proper counties. It also corrected some abuses in the trials by wager of law and of battle; it directed the regular awarding of inquests for life or member; prohibited the king's inferior ministers from holding pleas of the crown, or trying any criminal charge, whereby many forfeitures might otherwise have unjustly accrued to the Exchequer; and it regulated the time and place of holding the inferior tribunals of justice, the county court, the court leet, &c. It confirmed and established the liberties of the City of London and all other cities, boroughs, towns, and ports of the kingdom. And, lastly, it protected every individual of the nation in the free enjoyment of life, his liberty, and his property, unless declared to be forfeited by the judgment of his peers, or the law of the land. This charter is the most ancient written law in the kingdom. By the 25th of Edward I. it is ordained that it shall be taken as the common law: and by the 43d of Edward III. all statutes made against it are declared void.

MAGNESIA, or, as it is called by the latest nomenclature, *oxide of magnesium*, (See MAGNESIUM,) is a white insipid powdery substance, which slightly greens the blue of violets. Its specific gravity is 2,3; it is almost infusible, and insoluble in water. It does not absorb carbonic acid or moisture, as is the case with the other alkaline earths. Native magnesia is a very rare mineral, and has, hitherto, been found only at Hoboken, in New Jersey. Its colour is greenish white; its texture is lamellar and soft. The fossils which contain magnesia are generally soft and apparently unctuous to the touch, have rarely any lustre or transparency, and are generally more or less of a green colour. Nephritic-stone, or jade, steatite, or soap-stone, talc, asbestos, chrysolite, bitter spar, miemite, dolomite, and the magnesian lime-stone of Derby and Nottingham, contain a large quantity of magnesia.

It is usually obtained thus: Take of carbonate of magnesia, (see below) four ounces. Burn it in a very strong fire for two hours, or until no effervescence is excited, when acetic acid is found on it. This is the pure, *burnt*, or *calcined* magnesia of the shops. Its medical properties are the same as the carbonate of magnesia, mentioned below; but it is capable of absorbing more readily the acid abounding in the stomach. The dose is from ten grains to half a drachm, taken in milk or water.

Magnesia combines with the acids and forms salts of more or less importance. With the sulphuric acid it forms a purging salt, well known, called *sulphate of Magnesia*, or Epsom salt. This salt is found abundantly in sea-water. See EPSOM SALT.

With carbonic acid, it forms a *carbonate of Magnesia*, which is the common magnesia found in the shops. It is obtained thus: Take of sulphate of magnesia, one pound; of sub-carbonate of potash nine ounces; of water three gallons. Dissolve separately the sub-carbonate of potash in three pints of water, and the sulphate of magnesia in five pints, and filter: then add the rest of the water to the solution of sulphate of magnesia, and boil it, adding to it, while it is boiling, the solution of the sub-carbonate, of potash with constant stirring; and strain through linen. Lastly, wash the powder repeatedly with boiling water, and dry it upon bibulous paper, with a heat of 200°.

Carbonate, or, as it is called by some, sub-carbonate of magnesia, is anti-acid. It is a useful remedy in acidity of the *primæ viæ*, particularly of children in the thrush fever, and that which attends dentition: the compound formed by its union with an acid in the stomach is purgative; it is therefore preferable to chalk and other absorbents, when the bowels are costive. It has been given with advantage, combined with ipecacuanha and opium, in dysentery, the dose being followed by a draught of lemonade. It is also given advantageously in some kinds of calculus. See Gravel and Heartburn. The usual dose is from half a drachm to two drachms, taken in water or milk.

MAGNESIUM, the supposed base of magnesia, of which we have treated in the preceding article. The metallic base of magnesia has not hitherto been obtained, but when that earth is negatively electrized with mercury, the resulting compound decomposes water and gives rise to the formation of magnesia: hence magnesia is concluded, from indirect experiments, to consist of 11 parts of metal or magnesium, and 7,5 of oxygen.

MAGNET, Loadstone, or *ferrun magnes*, is a compact ore of iron, of a common form, found in the mines of Denmark, Sweden, Norway, Lapland, Siberia, Bohemia, and Peru, in masses, plates, grains, or eight-sided crystals; it often contains above 70 per cent. of iron. It varies in its colour according to the country, whence it is obtained. The best magnets are, it is said, imported from China and Bengal, and are of a deep bood-colour; some are reddish; others blackish; those found in Germany, Hungary, England, &c. have the appearance of unwrought iron. The distinguishing properties of the magnet are, its attractions of iron, as well as every matter containing particles of that metal, and its inclinations to the poles of the earth: hence its essential service in navigation, and its use in the construction of the mariner's compass.

Artificial magnets are now, however, frequently made, which possess the qualities of the genuine loadstone. The following is said to be one of the best processes for making a magnet. Take the scales which fall from red-hot iron when hammered, and reduce them into a fine powder, which must be mixed with drying linseed oil, so as to make a stiff paste; when it may be moulded into any form required. This mixture is to be put in a warm place for some weeks, till it becomes perfectly dry and hard; after which it may be rendered powerfully magnetic by mechanical friction with the magnet. This friction of the two metals should be performed in a directly horizontal line, from north to south; by which simple process, if continued for a sufficient length of time, even two flat pieces of iron or steel may be easily imbued with the magnetic fluid, so as to evince, in a considerable degree, the properties of the genuine loadstone, without having been touched by it.

Magnifying glass. See Microscope.

MAGNOLIA, in botany, a genus comprehending nine species, chiefly natives of America; a few of India: the following are the chief: The *grandiflora*, or Great magnolia, with perennial, oblong leaves and large white flowers. It rises eighty feet high, with a straight trunk, more than two feet in diameter, and a regular head. The *nipelata*, or Umbrella-tree, has lanceolate leaves; the outer petals hang down, generally ten or eleven to each corol, white and fragrant. The plant rises from ten to twenty feet high, with a slender trunk and soft spongy wood. The *acuminata*, or Spear-shaped magnolia, has ovate leaves, green on both sides; flowers twelve white petals, wood yellow. The *glauca*, or *Small magnolia*, with elliptic leaves and obovate petals, rises from ten to fifteen feet high, with a slender stem; wood white and spongy; flowers terminal, white, fragrant.

Magpie. See CROW.

Maho-tree. See SYRIAN MALLOW.

MAHOGANY, or *Swietenia*, a genus of trees comprehending three species, as follow:

The *mahogoni*, or Common mahogany-tree, having pinnate leaves in about four pairs, equal at the base; leaflets ovate lanceolate, equal at the base; panicles axillary. A native of the West Indies. In its native state, a lofty and branching tree, with a spreading magnificent head; flowers small whitish; capsule large, at times of the size of a child's head, woody, ovate, smoke-colour. It is cultivated by sowing the seeds, obtained from abroad in small pots, filled with light sandy mould in the spring, and plunging them in a hot-bed. The plant must be afterwards treated as belonging to the hot-house.

The bark, when dried, has an astringent bitter taste, more powerful than that of the Peruvian bark, and has been occasionally employed for the same medicinal purposes.

The *Febrifuga*, is a native of the East Indies, and its bark has also been advantageously employed as a febrifuge, whence its specific name.

The *Chloroxylon*, is also a native of the East Indies.

The *Mahogoni*, the principal of these species, is a native of the warmest parts of America, and grows also in Cuba, Jamaica, Hispaniola, and the Bahama islands. It thrives in most soils, but varies in texture and grain, according to the nature of the soil. On rocks it is of a small size, but hard, of a clear grain, ponderous and beautifully shaded; whilst in low rich lands, it is more light and porous. The uses and beauty of this wood are too well known to need description; its durability is great. The only inconvenience attending it as furniture, is, that it is apt to become extremely brittle by age.

MAHWAH, or MAWEE, an East Indian tree, so called by the natives of Bahar, but of which the Shancrit name is madhuca, or madhudruma; it is of the class polyandria monogynia of Linnæus, but its genus has not been described. When full grown, it is about the size of a common mango, with a bushy head, and oval leaves, a little pointed. The trunk is of considerable thickness, but seldom more than eight or ten feet high. The flowers are of a very extraordinary nature, having rather the appearance of berries. The tree drops its leaves in February, and early in March these flowers begin to come out in clusters, of thirty, forty, or fifty, from the extremity of every small branch: from this time, till the latter end of April, as the flowers come to maturity, for they never open nor expand, they continue falling off; when they are gathered, and afterwards dried, by an exposure of a few days to the sun; in this state they resemble a dried grape, both in taste and flavour. The fruit properly so called, is of two sorts in shape; one resembles a small walnut, the other somewhat larger and pointed: it is ripe towards the middle of May. The seeds are of the shape, but larger than the olive; they abound with a thick oil of the consistence of butter, or ghee, which is obtained by expression.

The Mahwah tree and its productions, are, therefore, of singular and general use in its native climate. The flowers, dried as above, are eaten by the natives raw, or dressed with their curries; and are a strengthening and wholesome nourishment. They yield also, by distillation, a strong spirit.

The oil is used for the same purposes as ghee in food; and in the composition of some sorts of sweetmeats; and as a lamp oil.

These products of the mahwah tree, afford in India considerable articles of trade.

Maid, in Ichthyology. See RAY.

MAIDEN HAIR, or *Adianthum*, a genus of plants, consisting of nearly forty species. They are of the fern kind; and although the *capillus veneris*, and some others, were formerly in the materia medica, they are of no importance.

MAIDEN HAIR TREE, GINKGO, or *Salisburia*, a genus consisting of one species, the *Salisburia adianthifolia*, a Chinese and Japan tree, with large fan-shaped leaves; drupe with a triangular nut.

MAIZE, INDIAN CORN, TURKEY WHEAT, or *Zea*, a genus of plants, consisting of two species, as follow:

The *Curagua*, with serrate leaves, a native of Chili.

The *Mays*, with leaves very entire; a native of America. This plant is cultivated, not only in America, but in many parts of Europe, especially in Italy and Germany. Several varieties. It is frequently raised in our gardens by way of curiosity, whereby the plant is well known. Its seed is the chief bread corn in some of the southern parts of America; but since the introduction of rice into Carolina, it is not much used in the northern colonies. It forms also a great part of the food of the poor people in Italy and Germany. The Indians make a sort of liquor from this corn, which is windy and intoxicating. It is prepared for food in various ways: sometimes by parching it, then grinding it between two stones, afterwards mixing it with water, and thus eating it. But we believe it is more commonly made into bread, or boiled into a kind of soup.

Malbrouk. See MONKEY.

Male Balsam Apple. See MOMORDICA.

MALIC ACID, the acid obtained from apples. The union of this acid with various bases, is called a *malate*. Malic acid exists also in house-leek, and in the berries of the mountain ash; when carefully obtained, it is a colourless liquor, very sour, and not susceptible of crystallization.

MALLENDERS, a scurfy kind of eruption on the back part, or bend of the knee-joint of the horse. After clipping off the hair, and washing the part well with soap and warm water, some mild astringent should be applied; such as the common wax ointment, or lard mixed with Goulard's extract, or sugar of lead. In obstinate cases, something stronger may be necessary.

MALLOW, or *Malva*, a genus of plants, consisting of fifty-seven species, scattered over the globe; some with undivided leaves; a greater number with angular leaves; four common to the wastes, hedges, and gravelly fields of our own country. We can only notice the following:

The *Sylvestris*, or Common mallow, is found in our hedges. It is demulcent; the decoction is occasionally employed in dysentery, ischury, and strangury; and in clysters, in tenesmus, and nephritic colic. It is used also for poultices, and fomentations in inflammatory swellings; it resembles the marsh mallows in its medical qualities, to which it is certainly inferior.

The *Alcea*, or Vervain mallow, has an erect stem; a native of Germany, and used medicinally as the last.

The *Crispa*, has an erect stem, and angular curled leaves; a native of Germany. The fibres of the bark of this, and several of the species, macerated like those of hemp, afford a whiter and tougher woof than that plant, and, of course, produces a more valuable cloth.

Mallow, marsh. See MARSH MALLOW.

MALLOW TREE, or *Lavatera*, a genus of plants, consisting of twelve species, natives of the Levant, and the South of Europe, one common to the sea coast of our own country. Of these, some have shrubby and herbaceous stems. Many of these are cultivated in our own gardens; and may be easily propagated by seeds, which should be sown in March. The seeds may also be sown in Autumn; and when the plants are come up, they should be transplanted into small pots, which, towards the end of October, should be placed in a hot-bed frame, where, being defended from severe frosts, they will continue through the winter without injury. In the Spring, they should be transplanted into larger pots, or in the open ground, where they are designed to flower. By this management they will be stronger, larger, and blossom earlier than when sown in the spring.

MALT, a term applied to grain, particularly barley, which has been made to germinate artificially to a certain extent, after which the process is stopped by the application of heat; and thus the saccharine matter, which is wanted from the grain, is rendered more easily separable from its other ingredients, for the purpose of making beer, ale, porter, &c.

The making of malt consists of four processes, which follow each other in regular order: namely, steeping, couching, flooring, and kiln-drying.

The steep is a square cistern, sunk at one end of the malt-house, lined with stone, and of a sufficient size to hold the whole of the barley that is to be malted. The barley is put into the cistern, and laid as evenly as possible upon the floor, with the requisite quantity of pure water, so as to cover it; here it must remain at least forty hours. It is the common practice to introduce the water into the cistern before the barley; and it is usually once drawn off, and new water added during the steeping.

When the barley is judged to have remained long enough in the steep, which is determined by the two ends of the barley being easily squeezed together between the finger and thumb, the water is let off, and the grain allowed to drain. It is then thrown out of the cistern upon the malt floor, where it is formed into as regular a rectangular heap as possible, which is called a *couch*.

Some hours after the barley has continued in this couch, it begins to acquire an increase of heat; and in about ninety-six hours after it has been thrown out of the steep, the temperature of the grain will be found about ten degrees higher than the surrounding atmosphere; it exhales an agreeable odour, and upon thrusting the hand into the heap, it not only feels warm, but it is so moist as to wet the hand; this moisture is called sweating. If the grains be now examined in the inside of the heap, we shall perceive rootlets beginning to make their appearance. These rootlets increase in length with great rapidity, unless their growth be checked by artificial means; and the principal art of the maltster is directed to keep them short till the grain is sufficiently malted. To this end, spreading the grain thinner upon the floor, and carefully turning it over several times a day, materially contribute. At first the depth is about 16 inches, but this depth is diminished at every turning, till at last it is reduced to three or four inches; the number of turnings are regulated by the temperature of the malt, which should be kept at about 62; but they are seldom fewer than two each day.

About a day after the sprouting of the roots, the rudiment of the future stem begins to make its appearance. This is called the *acrospire;* it rises from the same extremity of the seed with the root, and advancing within the husk, would soon issue from the other extremity in the form of a green leaf, if the process of malting did not prevent it.

The time during which the grain should continue on the malt floor, varies according to circumstances. The higher the temperature at which the grain is kept, the more speedily it is converted into malt. In general, however, fourteen days may be specified as the period which intervenes in England, from throwing the barley out of the steep till it is ready for the kiln.

The last part of the process is, to dry the malt upon the kiln, which stops the germination, and enables the brewer to keep the malt for some time without injury. The kiln is a chamber, the floor of which usually consists of iron plates, full of small holes, and in the roof there is a vent to allow the moisture to escape; under the room is a space in which a fire of charcoal or coke is lighted. The heated air which supplies the fire, passes up through the holes in the iron plates, and makes its way through the malt, carrying off the moisture along with it. At first the temperature of the malt is not higher than 90, but it is elevated very slowly to 140, or even higher. The great art lies in keeping the heat low at first, and raising it very gradually as the moisture is dissipated: for a high temperature applied at first, would infallibly blacken, or even char the malt, and, of course, diminish the quantity of saccharine and extractive matter. The time of kiln-drying varies considerably, according to the quantity of malt; but, in general, two days will be sufficient. After the fire is withdrawn, the malt is allowed to remain on the kiln till it has become nearly cold. By the kiln-drying, the roots of the barley, or the *comings*, as the maltsters call them, are dried up, and fall off. They are separated from the malt, by passing it over the surface of a wire screen, which allows the comings only to drop through. Before it is used for brewing, it is coarsely ground in a mill. The bulk of the malt is usually greater than that of the barley from which it is obtained, 100 bushels of barley yielding by measure, from 104 to 111 bushels of malt.

Thus it appears that the process of malting, is nothing else than causing the barley to germinate, and stopping that process before the green leaf makes its appearance. The kernel of the grain undergoes by this process a remarkable change. In what this change consists, is not so exactly understood; nor whether a part of the starch be converted into additional saccharine matter; but certain it is, that the saccharine matter is more readily separable from malt, than from crude barley. Although, as we have mentioned under the article BREWING, the conversion of barley into malt is not absolutely necessary for the purposes of the brewer.

We have, however, the authority of Mr. BRANDE for stating, that upon a comparative analysis of unmalted and malted barley, the following difference in their constituent parts were observed.

Gum	5......	14
Sugar	4......	16
Gluten	3......	1
Starch	88......	69
Barley...	100	100 malt.

If therefore this be taken as the average and general result of barley when malted, it is evident that much of the starch in the process becomes sugar and gum.

We have been lately informed, that it is a practice with some of the great brewers in the metropolis to add a certain portion of sulphuric acid to crude barley, and that this causes the barley to produce more saccharine matter than any process of malting whatsoever. See WHEAT SUGAR.

Messrs. WHITTLE and EYTON, obtained a patent, some time since, for drying malt by steam, which, as it enables the maltster to regulate the heat, promises much utility.

Malt forms a considerable object of English commerce. The following are the principal kinds, with their different weights:

Best pale Kingston..	39½ lbs.	per bushel.
Best Abingdon	36½ lbs.	ditto.
Best Norfolk	34½ lbs.	ditto.
Best Hertford......	35½ lbs.	ditto.

The average annual consumption, as estimated by the duty for the years ending 5th Jan. 1814 and 1815.; was 23,863,703 bushels. The duty on malt is 3s. 6d. per bushel.

Every maker of malt must take out an annual license from the excise office; for which, if the quantity of malt made within each year previous to taking out the license, ending the 5th of July, shall not exceed fifty quarters, he must pay 7s. 6d.; and 7s. 6d. extra for every fifty quarters.

MALVERN WATER, is classed among the simple cold waters. It contains some carbonic acid, a very small portion of earth, either lime or magnesia, united with the carbonic and marine acids. It is principally employed externally in scrofulous inflammations of the eyes, and cutaneous eruptions; internally it is said to be useful in painful affections of the kidneys and bladder, attended with blood, purulent or fetid urine, and *fistulas of long standing.*

MAMMALIA, in zoology, the first class of animals, comprehending the seven first orders, bruta, feræ, glires, pecora, belluræ, and cetacea. It includes, as its name imports, all those animals which suckle their young by a mammary organ, udder, or breast.

MAMMAL, an animal which feeds its young by means of a breast or udder, see the preceding article.

MAMMOTH, or *Megatherium*, in zoology, a genus having a near resemblance to the elephant, but which has never been found alive, although it is suspected to be still a living animal in some of the wilds of America, and the northern parts of Siberia. Its residence appears to have been confined to a line in the northern hemisphere, extending from Siberia to the banks of the Ohio. An animal of this kind was found some years since, not indeed alive, but complete, amidst a block of ice, and in a state of nearly perfect preservation, on the northern shores of Asia.

The skin of this animal was of a deep grey colour, and covered with reddish hair, and black bristles; these, from the dampness of the ground, had lost part of their elasticity; many of them were two feet four inches long; the head weighed 460lbs.; the two horns, each of which was 9½ feet long, weighed 400lbs. The entire animal was 10½ feet high, by 16½ feet long. The tusks are so curved as to form three-fourths of a circle; their curvature is in the direction opposite to those of the elephant, bending towards the body of the animal. It does not appear to have any proboscis.

In America, this animal, or one so nearly resembling it as probably to be a distinct species of the same genus, has only been found in a fossil state.

MAN, or *Homo*, from the superiority of his organization when compared with all other animals, and from his greatly superior mental powers, is deservedly placed at the head of all the visible creation.

Although the anatomical structure of the human body evinces man to be the most perfect of animals, yet in this alone does not consist his pre-eminence, but in that wonderful and delicate organization whence proceed those intellectual treasures which are at once the ornament, the grace, and the solace of his being. All other animals appear, in the space of a short existence, one little life, to arrive at their ultimate capabilities, both bodily and intellectual; but man, and man alone, of all animated beings, is progressive; his knowledge is handed down from age to age, and he is thereby enabled to improve upon the past, to meliorate the present, and to prepare the way for the future happiness of his posterity.

It is not consistent with our plan to enlarge on this subject here. Our physical and intellectual functions and capacities are more specifically treated of under the articles ANATOMY, BRAIN, &c., and also MIND, and the various articles on the passions throughout our work, to which, therefore, we refer.

Some physiologists have aranged man in a similar manner with other animals, as follows:

Homo, or Man, in zoology, the first genus in the class mammalia, order primates; thus generally characterized: fore-teeth cutting, upper four parallel; teats two, pectoral. Intellectual faculties, when improved by discipline, great and surprising. The genus admitting but one species is divided into the following varieties:

The *Albus*, or White man, formed by the rules of symmetrical elegance and beauty. This division includes almost all the inhabitants of Europe; those of Asia on this side the Oby, the Caspian, Mount Imaus, and the Ganges, as well as the natives of the north of Africa, of Greenland, and the Esquimaux.

The *Badius*, or Brown man, of a yellowish brown colour, with scanty hair, flat features, and small eyes. This variety includes the whole of the inhabitants of Asia not comprised in the preceding.

The *Niger*, or Black man; with black complexion, frizzy hair, flat nose, and thick lips, includes the whole of the inhabitants of Africa, except its more northern parts.

The *Cupreus*, Copper-coloured, or Red man, whose complexion resembles the hue of unburnished copper, comprehends all the inhabitants of America, except the Greenlanders and Esquimaux.

The *Fuscus*, or Tawny man, chiefly of a dark, blackish-brown colour, inhabits Australasia, Polynesia, and most of the Indian islands.

Another variety, it has been supposed, should be added to the above, consisting of those persons having white hair and red eyes, commonly denominated *Albinos*; but it has been pretty demonstratively ascertained, that these characteristic marks originate in disease.

Man of war bird. See PELICAN.

MANAGE, an academy, riding-school, or other place for learning to ride the horse; and also for breaking horses into their proper paces, motions, and actions.

MANCHINEEL-TREE, or *Hippomane*, in botany, a genus consisting of three species, natives of the West Indies and America, as follow:

The *Manicella*, a West Indian tree, has ovate serrate leaves, with two glands at the base. The milky juice of this tree is highly poisonous, and was once used by the Indians as a poison for the tip of their arrows. The poisonous property pervades nearly equally the fruit and the wood; hence the incautious traveller, tempted by the appearance of the fruit, has often fallen a victim to it. If the juice of this tree touches the skin, it generally blisters it; and it even destroys linen on which it falls. The closeness and beauty of the grain of its wood is much esteemed by cabinet makers; but the fellers of the timber are obliged to make a fire round the trunk, to dry it, before they attempt to cut it down: the sawers of the wood are alſo obliged to cover their eyes in order to avoid its mischievous effects. See POISON.

The *Spinosa*, and the *Biglandulosa*, are both natives of South America; they possess an acrimonious juice of the same kind as the preceding, but less pungent and fatal. Neither of them is so lofty; for while the first rises to the size of a large oak, the spinosa seldom attains twenty feet in height, and has the external character of a holly.

Mandrake. See DEADLY NIGHT-SHADE.

MANGANESE, or *Manganesium*, a metal usually found in the state of peroxide, which is heavy, moderately hard, and of a dusky grey colour, approaching to black. It is obtained in great abundance in Devonshire, Somersetshire, and Aberdeenshire. The metal may be procured by exposing the protoxide, mixed with charcoal, to an intense heat. It is of a bluish white colour, very brittle and difficult of fusion. When exposed to air it becomes an oxide. Its specific gravity is 8.

There are three definite oxides of manganese. The *protoxide* may be obtained by digesting the native black oxide in muriatic acid. The solution furnishes a white precipitate with any of the alkalis, and which, when dried in close vessels, acquires a deep olive colour, and is the protoxide.

When sulphate of manganese is heated red hot, sulphurous acid is given off, and a dark red *deutoxide* remains.

The native peroxide is not soluble in acids. It is used in the laboratory as a means of obtaining oxygen; and is largely employed in the preparation of chlorine for the bleachers. It is also used in glass-making; and, when added in excess, gives it a red or violet colour. It is also employed in porcelain painting; and it gives common earthenware a black colour, by being mixed with the materials before they are formed into vessels.

The native oxide of manganese has been recommended for a fumigation to destroy infection; it is used thus: Take of common salt four ounces; oxide of manganese, in powder, one ounce; sulphuric acid one fluidounce; water two fluidounces: the water and acid must be mixed together, and then poured over the other ingredients, in a China bason, which should be placed in a pipkin of hot sand. The doors and windows of the room to be fumigated must be closely shut for two hours after the charged bason has been placed in it, then thrown open, and a current of air allowed to pass through the room.

MANGE, a disease of the skin affecting horses, dogs, swine, and other animals, in a similar manner, and caused by similar means, as the itch, viz. an animal which works its way beneath the scarf-skin. It is called the *Scab,* or shab, in sheep.

In every animal, and in every variety of this disease, sulphur may almost always be relied upon as a safe and effectual remedy. The same ointment, to be applied in the same manner as mentioned under the article **Itch**, is the best method of cure. But as it may sometimes happen that animals affected with the mange might lick themselves when the ointment is applied to them, the hellebore should be omitted, or unpleasant effects may occur. The animals should also be dosed with sulphur, before and after being dressed with the ointment. The necessity of cleanliness cannot, even in regard to these animals, be too strongly enforced.

As, however, sulphur may be objected to on account of its smell, we subjoin the following forms, premising that he use of quicksilver, in any of its shapes, should, notwithstanding, if possible, be avoided.

Take of corrosive sublimate from ten to fifteen grains; of emetic tartar two drachms; of ginger two drachms; of powdered carraway seeds and syrup, enough to form a ball. This is a powerful dose for a horse: perhaps if one-fourth of the quantity of corrosive sublimate be given, and the dose repeated three or four times at an interval of two or three days, the cure will be more likely to be complete. An external application to the skin should also be employed at the same time; it may be made thus: take of corrosive sublimate one drachm, of muriatic acid half an ounce; in which let the sublimate be dissolved, and add to the solution one pint of rain or soft water.

The following has been recommended for the scab in sheep: Take of corrosive sublimate one drachm; of crude sal ammoniac half an ounce; of a strong decoction of tobacco one pint: mix them. Upon the whole, this may be considered the best and most effectual cure for sheep. A preparation similar to this is sold to farmers in various parts of England, under the name of *shab-water.*

There is a variety of mange in dogs, called the *red-mange,* which may be cured by mercurial ointment.

MANGEL WURZEL, or **Root of Scarcity**, is a variety of the beet, which some years since excited considerable attention, but the expectations from its culture have been by no means realized. It appears chiefly useful as green food for neat cattle and hogs; but it is said that it is not equal to the cabbage in this respect.

MANGLE, a valuable domestic machine for the purpose of smoothing such linen and other articles as cannot be conveniently ironed. Various patents have been obtained for improvements in this machine, among which those of Mr. S. **Clubbs**, and Mr. J. **Morris** may be mentioned.

Although the great increase of power and dispatch obtained by the mangle leave no doubt of its superiority in many respects to that of simple ironing, yet many of our careful housewifes complain, that the mangle is very injurious to the texture and wear of the cloth submitted to its pressure, of which, indeed, we can entertain no doubt.

MANGO TREE, or *Mangifera,* a genus comprising three species, natives of India and the Mauritius. The chief is the *Indica,* with oblong lanceolate leaves; with many flowers about one stamen; drupe very large, kidney form: when ripe it is juicy, of a good flavour, and so fragrant as to perfume the air to a considerable distance. It is eaten raw, or preserved with sugar. The unripe fruit is pickled in the milk of the cow become sour, with salt, capsicum, and garlic, in which state it is brought into this country.

The plant has never thriven in our gardens.

Mango-Fish. See POLYNEME.

MANGOSTAN, MANGOSTEEN, or *Garcinia*, in botany, a genus of plants comprising four species, all East Indian trees. The two following are most worthy of notice: The *Mangostana*, or Mangostan, a tree of Java, about the size of a crab-tree, with ovate leaves, and one-flowered peduncles. The flower is like a single rose: the fruit round, about the size of an orange, and very delicious, most exquisitely flavoured, and said indeed to be the most salubrious of all fruits, possessing a most agreeable mixture of tart and sour. The flesh is juicy, white, almost transparent, and of a more delicate flavour than the richest grape. It is eaten almost for every disorder. The dried bark is used medicinally in dysentery and tenesmus; a strong decoction of it is also used as a gargle in sore throats. The *Cambogia*, or Gamboge-tree, has elliptic leaves. It is a native of India, and it is said that the gum resin, Gamboge, is obtained from this tree by wounding it: but this is doubtful. See GAMBOGE.

MANGROVE, INDIAN KANDEL TREE, MANGLE, or *Rhizophora*, a genus comprehending five species, which grow only in water, or the muddy rivers of Asia, Africa, and America, under the tropics, bending their branches perpendicularly to the ground, and changing them into stems, penetrating into the soil, and giving forth rootlets. The most curious of the tribe is the Mangrove, or Mangle-tree: the rootlets from the branches are so productive, that it is said, a single tree is often found to cover more than a mile of ground, presenting a forest of innumerable stems, and its various intervals forming a multiplicity of natural arcades, from five to ten feet high. It is covered with a prodigious quantity of acute leaves. The bark is often used for tanning leather; the wood is used chiefly for fuel, burning with ardour and brightness; it is close grained and enormously heavy, which prevents its being used for mechanical purposes; it never splinters, and is almost indestructible. Oysters very generally attach themselves to the branches of these trees, as they hang over and plunge into the water.

There are two varieties of this tree, the red-mangle growing on the sea side, and the white mangle. The bark of the last is twisted into ropes, which are strong and not apt to rot in water.

Mania. See INSANITY.

Manihot. See CASSAVA.

MANIPLE, or *manipulus*, among physicians, a handful.

Manis. See PANGOLIN.

MANNA, a saccharine juice, which exudes in warm dry weather, from the stem and branches of the *fraxinus ornus*, or flowering ash, which grows abundantly in Calabria, Sicily, and Apulia. This juice, concreting into whitish tears, is scraped off and sold under the name of manna, in tears. But the greater part of the manna is, however, obtained by longitudinal incisions, about three inches long, made on one side of the tree, only in the same season, and continued from the base of the trunk upwards, as far as the branches. Manna is obtained in the shops of different names and qualities. The best is called *Flake*-manna in oblong pieces, or flakes of a whitish or pale yellow colour; indeed, it has the appearance of a concrete fine raw sugar, which it chiefly appears to be.

Manna, is a very gentle laxative, and is chiefly given to children: it is, however, altogether so unimportant that its use in medicine may be very well dispensed with. The dose as a purge for children, is from two to four drachms; and for adults, from one to two ounces.

Manners. See GOOD BREEDING.

Mansferry. See FALCON.

MANSLAUGHTER, in law, is the killing of a man without any malice prepense or fore-thought. This crime may be either voluntary as on a sudden loss of temper; as if a man is greatly provoked, and kills the aggressor, it is manslaughter; but if it appear that there was sufficient time for the heat of anger to subside, it is an indication of deliberate revenge, and amounts to murder. Or it may be involuntary, but in the commission of some unlawful act; and, in general, when an involuntary killing happens in consequence of an unlawful act, it will be murder, or manslaughter, according to the act which occasioned it.

This crime, though felony, is within the benefit of clergy; the offender by the law, is liable to be burnt in the hand, and forfeits all his goods and chattels; but by 19. Geo. III. c. 74. the court may commute this punishment to a moderate fine and imprisonment. See HOMICIDE and MURDER.

Mantiger. See MONKEY.

MAN-TRAP, a well-known engine, constructed like a rat-trap, but of a larger size, for the purpose of catching petty depredators, in gardens and orchards.

How much soever such depredations may be lamented, which man-traps are confessedly designed to prevent, the justice, humanity, and even legality of setting these engines, admit of strong question; and sure we are that no humane or benevolent mind, will suffer such an instrument to be placed in his garden, or other inclosure, for such a purpose. Even the catching of a rat, in a similar manner, is not such a mode of destruction as we can approve.

MANUFACTURES, the arts by which natural productions are brought into the state or form in which they are consumed or used.

The manufactures of this country form important articles of its trade and commerce, and have no doubt contributed greatly to individual wealth. But it has been truly said that the nation which depends on its manufactures for prosperity, sleeps upon gunpowder. Whilst the operations of agriculture have a direct tendency to separate and subdivide mankind, those of our manufactures, if carried on upon a large scale, must have a concentration of labour, in order to produce those profits, which are the aim and end of all individual enterprize. The accumulation of men in large bodies, such as our manufactories and manufacturing towns necessarily are, imparts to them an increase of knowledge, and that knowledge is of such a kind as to excite, as we have most lamentably seen, an opposition at once formidable and alarming. In this country, however, the Rubicon appears to be passed, and wisdom should avail itself of the knowledge which is abroad, to meliorate the condition of those who have sufficient light to perceive their actual importance in the state. It appears to us, that expedients have been too long the order of the day: something more effectual must be adopted, to allay the irritation, and improve the general well-being of the labouring classes in this country, or an explosion, not less astounding than disastrous, will be most probably the ultimate result. See MACHINERY.

MANURE, denotes any substance employed for improving land, whether for remedying its natural poverty, or by correcting its too great stiffness, looseness, or other qualities unfavourable to vegetation. Manures may be classed under the general heads of putrescent, calcareous, earthy, vegetable, those of a miscellaneous nature, and composts.

Putrescent manures, consist of the dung of quadrupeds and birds, town dung, night soil, urine, land animal substances, and fish. The quantity of dung to be applied as manure, is an important question. Formerly too much was given, and the crops were surfeited with a profusion of nourishment. According to modern practice, only as much is furnished at one time as will fertilize the ground and render it capable of producing goods crops, until a fresh supply can be administered. Formerly, from twenty to thirty tons were given per acre, whereas now, one half that quantity is found to be sufficient. Whatever quantity is used, the dung should be spread equally and divided minutely, that every part of the ground may receive an equal supply. If it be applied to grass land, it can only be spread over the surface, and all the advantage to be derived from it, is the fertilizing matter washed down by the rains. When applied to arable lands, it is strongly recommended to cover the dung well; but here, as in most other things, extremes should be avoided. There is a material difference of opinion existing as to the state in which dung ought to be applied to land. The opinion of Sir Humphry Davy is, that it ought to be carried out upon the land, as soon as possible after it has fallen from the animal, being received on straw, and that when spread on the field, the straw may be raked off; whilst others prefer applying it, and, indeed, it is most commonly applied, when both the dung and straw are in a rotten state. Both these methods have, we apprehend, their advantages.

Bones, woollen-rags, curriers'-shavings, horn-shavings, &c. &c. are also useful manures of their kind. See BONES.

The *calcareous* manures consist of lime, pounded lime-stone, lime-stone gravel, chalk, marl, sea-shells, soapers' waste, and gypsum. See LIME, GYPSUM, &c.

The *Earthy* manures are, mould or loam, Peat earth, Clay or sand, Burnt clay, (See CLAY) Sea ooze or warp, Canal, Pond, or River mud, Road scrapings, &c.

The Vegetable manures are of various kinds, such as sea-weeds, fresh-water weeds, common weeds, malt dust, rape-cake, tanners' bark, the ashes of burnt vegetables, and water in which vegetables have been immersed.

The miscellaneous article of manure, are common salt, (See SALT), soot, the refuse of various manufactures, the refuse of coal mines, and of lime kilns.

The utility of composts has been proved in numberless instances. They are made of various materials; such as several sorts of earth, lime, old mortar, and plaster, green vegetables before they run to seed, soft chalk, tanners' bark, saw-dust, soap ashes, dung, &c. It is most advisable, that instead of being in regular layers, they should be mixed as much as possible, in forming the heap. A fermentation is soon excited, and the oftener the heap is turned, so much the more will the fermentation be promoted. Composts are peculiarly well calculated for grass lands. They are likewise of great use to moorish soils, augmenting their staple, and adding to the number of valuable and enriching substances.

Endless sources of fertility may be obtained by the judicious application of manures. It would be well, however, if various doubtful points relative to the nature and effects of manures, and their most advantageous application, were ascertained by a series of experiments, on various soils, in various climates, and under different courses of crops. Agriculture will never reach that perfection and certainty which it ought to attain, until these experiments have been made. See IRRIGATION and HUSBANDRY.

MANUSCRIPT, a book or paper written on by the hand. The letters of any manuscript, which are apparently obliterated, may be best restored by slightly moistening it with a sponge, dipt in cold water, after which some galls finely levigated, must be sifted over the paper. When it is perfectly dry, the powder should be gently shaken or brushed off, and the letters will re-appear.

MAP, a plane figure, representing the surface of the earth, or some part of it, being a drawing or engraving, in which the division of the globe, into countries, seas, rivers, mountains, &c. should be accurately pointed out. Persons who desire to become acquainted with Geography, should consult the best maps, and those too with sedulous attention.

MAPLE, or *Acer*, a genus of plants, consisting of twenty species. The male genus, having eight stamens, but neither germ nor style, are for the most part forest trees, and are common to Europe and America. The most frequent species in our own country is the *Pseudo-platanus*, great maple, sycamore-tree, plane or mock-plane. Its wood is often used in turning for dishes, bowls, and trenchers.

The most beautiful of the species is the *Rubrum*, or Scarlet maple, which is often cultivated for its lovely scarlet flower.

The *Campestre* is chiefly grown in this country for hop-poles.

The *Saccharinum*, or Sugar maple, a native of North America, is the most useful species, and is the source from which the maple sugar, so well known in the back settlements of the United States of North America is derived. It rises generally to the height of forty feet. The saccharine juice is obtained by tapping the tree with an auger, about the months of February, March, or April. Two full-sized trees will yield, in the spring, about twenty-three gallons of juice in twenty-four hours; from which very nearly five pounds of sugar are commonly obtained. Sometimes, however, three gallons of juice will yield one pound avoirdupoise of sugar.

Maranta. See Arrow Root.

MARASMUS, emaciation, a wasting away of the flesh without fever. See Atrophy.

MARBLE, or *Marmor*, in mineralogy, a genus of earths, consisting chiefly of carbonate of lime, carbonic acid, and water. It burns into quick lime, and is for the most part soluble in acids with effervescence. See Lime. In the language of the statuary and architect, however, all stones are called marble, which are harder than gypsum, occur in considerable masses, and are capable of a good polish: hence granite, porphyry, serpentine, and basalt, as well as many varieties of lime-stone, are called marble.

Fourteen species of marble, properly so called, have been enumerated. Among primary rocks, marble is associated with mica-slate, and serpentine; it differs from marble belonging to other rocks, in its granular foliated texture, and in the absence of organic remains.

The most esteemed varieties are perfectly white, free from veins, somewhat translucent, and susceptible of a good polish. These are imported for ornamental purposes, especially those of the sculptor. Nearly all the sublime works of the Grecian artists, were sculptured in the marble from the island of Paros. The next marble in estimation, is that of Carrara, in Italy. Of the coloured varieties, that of the Isle of Tiree is extremely beautiful, being a pale red, spotted with green horn blende.

Great Britain is also amply stored with various marbles; for a more minute account of which, see Lime.

Marble powder affords a very elegant method of obtaining carbonic acid. See Nooth's Apparatus.

MARBLING, in general, is the painting of any thing in veins, or clouds, so as to represent those of marble.

Marbling of books, or paper, is performed thus: dissolve four ounces of gum arabic in two quarts of fair water; then provide several colours mixed with water, in pots or shells, and with pencils peculiar to each colour, sprinkle them, by way of intermixture, upon the gum water, which must be put in a trough, or some broad vessel; then with a stick curl them, or draw them out in streaks to as much variety as may be done. Having done this, hold the book, or books close together, and dip only the edges in on the top of the water and colours very lightly: the impression of the colours will be, of course, upon the leaves, which must be afterwards glazed: paper may be marbled in the same manner, by merely bringing one surface in contact with the colours.

MARCASITE, a name given to different ores of arsenic. See Mundic

MARE, or *Equa*, the female of the horse. See Horse.

Mare's tail. See Horse tail.

MARIGOLD, or *Calendula*, a genus of plants, embracing twenty-five species, chiefly Cape plants, the rest principally of the South of Europe. The greater part of these are so common, and so easily propagated, that we shall only notice the *arvensis*, or Wild marigold, found in our own fields; and the *fruticosa*, with a shrubby, perennial, decumbent stem, requiring support, leaves obovate, slightly toothed. The *vulgaris*, or Single marigold, was formerly in the materia medica, but is now deservedly neglected.

The petals of the flowers are used by many country people as a condiment in broth. The whole of this genus appears to be of use only as ornamental flowers, some of which are unquestionably very beautiful, and readily propagated by seeds.

Marigold, the African. See AFRICAN MARIGOLD.

Marigold corn. See CHRYSANTHEMUM.

MARIGOLD, the FRENCH, or *Tagetes patula.* See AFRICAN MARIGOLD.

Marine Acid. See MURIATIC ACID.

MARJORAM, or *Origanum*, a genus of plants, comprising sixteen species, chiefly natives of Palestine, the South of Europe, the Mediterranean coasts, and one of our own country. The following are cultivated: the *vulgare*, or Common marjoram; the *onites*, or Pot marjoram: the *marjorana*, or Sweet marjoram; the *heracleoticum*, or Winter sweet marjoram; the *Egyptiacum*, or Egyptian marjoram; the *dictamnus*, or Dittany of Crete; and the *Syriacum*, Marum, or Syrian herb mastich. The two last were formerly in the materia medica, but are of no importance.

The *Vulgare*, or Common marjoram, is an indigenous perennial, growing on dry, chalky, and gravelly hills, and flowering from July to September. The root is creeping and fibrous; the stems are branching, erect, about eighteen inches in height, downy, of a purplish hue; the leaves are ovate, and of a yellowish green colour; the flowers are of a pink, purple, or rose colour. The odour is agreeable and aromatic, much resembling thyme. In distillation with water, it affords a very acrid, penetrating, volatile oil, on which its qualities depend. This oil is most usually known in the shops by the name of *oil of origanum.* Common marjoram is esteemed tonic, stomachic, and emmenagogue, but it is, notwithstanding, rarely used medicinally.

The essential oil, which is most commonly imported into this country from abroad, is a powerful stimulant, which is used in various external applications. See LINIMENT. It is applied also occasionally, dropped upon cotton, for the tooth-ach: from its acrid quality, it is never given internally. It is also a useful application in various swellings, &c. of horses, and other animals. A seed called *Adjowaen*, the produce of a nondescript plant, imported from the East Indies, affords an oil of precisely similar properties as oil of origanum, and is, we believe, occasionally sold for it, sometimes under the more specious name of oil of thyme.

The *Marjorana*, or Sweet marjoram, is a native of Portugal and Syria, but cultivated in our gardens, chiefly for culinary purposes. The roots are long and fibrous, stems numerous and branching, rising a foot and a half in height, with downy, entire, ovate, pale green leaves, and small white flowers, which appear in July and August. The odour is pleasant, and the taste moderately warm, bitterish, and aromatic. It is supposed to be tonic; but its medicinal virtues are unimportant.

MARLE, a calcareous substance, found under very different forms, and in various parts of Great Britain. It is distinguished, from its particular appearance, into shell, clay, and stone marle. The first is constantly found in such situations as have been covered with water; the second contains much clay, combined with the calcareous matter, whence it absorbs and retains moisture more strongly than most of the other kinds; the clayey marles vary greatly also in their colour, being of a brown, blue, red, or yellow tinge; the stone marle has different proportions of sand united with the calcareous matter and the clay: where this last is of a thin laminated structure, and flaky appearance, it is frequently denominated slate marle. From the portion of clay contained in these marles, they become capable of being gradually softened by the action of water, and ultimately fall down in a powdery state.

But, notwithstanding these specific differences, they all agree in being reduced into a powdery state by exposure, for some length of time, to the influence of the atmosphere, by which means they may be intimately blended with the soil, to which, as manure, they may be applied. This general property of crumbling into small particles, is much greater in some kinds of marle than in others, and hence it may cause some difference in their utility as manures.

Marle produces beneficial effects on most sorts of soil in its different forms: the shell, stone, and those kinds abounding most with calcareous earth, or which have sand in their composition, are the best adapted to strong, stiff, clayey soils; whilst those in which clay is predominant, are more suitable to light, dry, sandy, gravelly, and loamy soils; but on the stronger sorts of the last mentioned soils, clayey marle is improper.

The quantity of marle used per acre, varies exceedingly. In many cases, 300 middling cart loads per acre, of clay, or red marle, have been used; in others, slighter coverings are preferred, and the process is more frequently repeated.

Marle is employed both on arable and grass lands, from different seed crops. On the former, it is generally used as a preparation for barley, turnips, and similar crops; or applied upon clover, and other new leys, previously to their being ploughed up for wheat; for which purpose it should be spread out upon the surface of the land for some time before it is turned, in order that it may be most effectually reduced to a powdery form. In its application to grass lands, it has been frequently laid on in too great quantities, or left too long in a lumpy state, than which nothing has been found more injurious.

But further experiments appear necessary with this article, in order to obtain the utmost benefit from it as an agricultural manure.

MARMALADE, the pulp of quinces, boiled into a consistence with sugar.

Marmose. See OPOSSUM.

MARMOT, or *Arctomys*, a genus of animals, comprising eleven species, chiefly inhabitants of the Alps and North America. This tribe becomes torpid in the winter, rambles by day, feeds on grain and roots, climb, and burrow. The two following are most worthy of notice: the *marmota*, or Alpine marmot, has a brown body, beneath reddish; inhabits the summits of the Alps and Pyrenees; drinks little, basks in the sun, and is easily tamed; lives wild among small tribes, with a centinel placed to give notice of danger, which is done with a hiss; forms a burrow, with many chambers and entrances for the summer, and another lined with soft grass, in which it remains torpid during the winter. The *bobac*, having a grey body, beneath yellowish, inhabits dry and sunny mountains in Asia and China; habits similar to the last species.

MARRIAGE, a contract in this country, both civil and religious, between a man and woman, by which they engage to live together in mutual love and friendship during their joint lives.

Marriage is one of the most serious and important concerns which can arrest the attention of man, yet how often is it carelessly, or indifferently contracted, and as carelessly and indifferently, as far as regards the mutual happiness of the parties, broken.

Having, under the article HUSBAND AND WIFE, pointed out the most comcon causes of those bickerings, which are too often concomitants of the marriage state, we shall confine our notice here chiefly to the principal laws relative to marriage.

Marriage, as a civil contract, is good and valid in all cases, when the parties at the time of making it were willing, able, and did contract in the proper forms and solemnities required by law.

By several statutes, a penalty of 100l. is inflicted for marrying any person without banns or license; but by 26 Geo. II. c. 33, solemnizing matrimony without banns, or license, or except by special license, is felony, and subjects the offender to fourteen years transportation, and such marriage is also void. Marriages according to the laws of any other country, are valid in England, if duly solemnized in any other country, as marriages in Scotland are; but by the preceding statute, marriages by license, where the parties are not twenty-one, must not be without consent of the father, or guardian of the party. Marriage cannot be solemnized between persons within the Levitical degrees; but if solemnized, they are not void till after sentence of the proper court. Promises of marriage, and pre-contracts, do not prevent the parties from lawfully marrying other persons; but an action lies for breach of the contract. Marrying a woman, being an heiress, forcibly, is a capital felony.

A wife cannot leave her husband. If she elope from him, she loses her dower, unless she return and is reconciled. An action of trespass lies for taking away a wife, with the goods of her husband; and also for criminal conversation with the wife of any one.

If a man ill use, and turn his wife away, she has credit for necessaries wherever she goes, and he is obliged to pay her debts; but it is otherwise if she elopes, or commits adultery.

Divorces are of two kinds, absolute, and from bed and board. The former can only be by Act of Parliament, unless it is for some original defect in the marriage; the latter is allowed on account of ill-treatment, &c. and then the wife has alimony, or maintenance allowed her.

In a work of this nature, it might be expected that we should say something about the proper period of life in which it would be most advisable for persons to enter into the marriage state; but so much must depend upon circumstances, that we do not think any advice we might give can be of much utility. The *means of subsistence* for a young and growing family, are, however, on entering into this state, a consideration of great moment, and those young persons, who marry without probable prospects of having such means, may assuredly reckon upon much inconvenience, more or less misery, and some unhappiness; indeed, as society is at present constituted, for persons without means to think of marriage in this country, is little less than downright insanity. We make these observations advisedly, and are aware, in inculcating habits of prudence, that we at the same time inculcate the suppression of some of the most agreeable emotions of the human mind. We lament that it is our duty to give this advice; but we also hope that those who have the courage to be *prudent*, may not find that our admonition has been in vain.

MARROW, or *Medulla*, the concrete oily matter, secreted in the cells and canals of the bones of animals. Marrow appears to be similar in properties to other animal fat. See FAT.

Marrow, the spinal. See SPINAL MARROW.

MARSH, a tract of land, occasionally at least, overflowed by water. It is, however, in this country, often applied to land that is merely flat, and commonly covered with luxuriant herbage.

Marsh lands are in general rich pastures, but often more or less injurious to the health of persons residing on them, inducing agues, and other diseases. See AGUE.

MARSH CINQUEFOIL, or *Comarum*, a genus, consisting of one species only, the *palustre*, indigenous to the marshes of our own country, having a stem rising about two feet high, decumbent at the base, with dark purple flowers, followed by a fruit resembling a strawberry.

MARSH MALLOW, or *Althæa*, in botany, a genus, consisting of nine species, of which the *officinalis* is the chief, which is an indigenous plant, growing in marshes, moist situations, and river banks throughout Europe. The root is perennial, the stems are annual, upright, and herbaceous, rising from two to three feet in height. The leaves are alternate and petiolate, having both surfaces downy, feeling like velvet; they are of a very pale green colour, inclining to whitish. The flowers are of a pale bluish colour, appearing in June and July. The roots are dug up in Autumn; the leaves should be picked just as the flowers are about to appear.

Marsh mallow root is inodorous, mucilaginous when chewed, externally of a yellowish colour, internally white and fibrous; it contains a very considerable portion of mucus, which it yields to water by decoction. The preparations of this plant, which derive their virtues from its mucus, are useful demulcents in visceral inflammation, and calculous complaints. The roots well boiled, are sometimes used as an emollient, suppurative cataplasm, and are best for this purpose in their crude state, without previous drying, A decoction of the dried leaves, forms a useful fomentation in external abrasions; and in cutaneous eruptions, accompanied with a sharp ichorous discharge.

A syrup of marsh mallow may be made thus: take of fresh marsh mallow root bruised, half a pound; of refined sugar, two pounds; water, four pints. Boil down the water with the marsh mallow root to half, and express the liquor when cold. Set it aside for twenty-four hours, then decant off the clear liquor, and having added the sugar, boil down to a proper consistence. The syrup is, however, of no great importance.

MARSH MARIGOLD, or *Caltha*, a genus of plants, consisting of two species, the *palustris*, with an erect stem, found in our own marshes; and the *natans*, with a procumbent floating stem, a native of Siberia. The former, with a double flower, is propagated in our gardens on account of its beauty; it is best increased by parting the roots in Autumn; it requires shade and moisture.

Marsh trefoil. See BUCKBEAN.

Martagon lily. See LILY.

Martin. See SWALLOW.

Martin, or Marten. See OTTER.

MARSH-MOSS, or *Menium*, a genus of mosses, whose generic character is a capsule with a lid; calyptre smooth; bristle from a terminating tubercle; male flowers headed, or discoid. Twenty species have been enumerated; the *hygrometricum*, is the most remarkable; if its fruit stalk be moistened at the bottom, the head makes three or four turns; and if the head be moistened it turns the contrary way.

MARVEL, or PERU, or *Mirabilis*, a genus of plants, comprising four species, natives of India and South America. The roots of all the species are purgative in some degree, and are occasionally used to produce this effect. The *jalapa*, erroneously confounded with the *convolvulus jalapa*, is chiefly cultivated for its flowers, which are very showy, and in different varieties, of almost every colour.

Marygold. See MARIGOLD.

MASH, a kind of thick pap, made of different substances, such as oatmeal, bran, malt, &c. and given to horses. A malt mash may be made thus: take half a peck of ground malt, put it into a pail, and pour upon it as much scalding water as will wet it very well. Stir the mixture, and when it has stood till it is lukewarm, it is to be given to the horse. This mash is mostly used after a purge, to make it work better; or after hard labour, or in the time of sickness. It is, of course, very nutricious.

MASONRY, a branch of architecture, consisting in the art of hewing or squaring stones, and cutting them level, or perpendicular, for the uses of building, and also of uniting them with mortar, or other cements, so as to form a wall, house, or other building. In masonry, the chief objects are to take care that the stone employed is of a durable kind, and that the mortar is good. See BUILDING and MORTAR.

MASONRY, FREE, denotes the system of the mysteries and secrets peculiar to the society of persons calling themselves free and accepted masons. We define this term, in order to observe, that much as we respect the free-masons, whose society, as a charitable institution, is deserving of commendation, yet as all mystery in human affairs is wrong, so free-masonry, which appears to be supported by its mysteries, is unquestionably founded in error. There may be nothing in free-masonry injurious to the best interests of mankind; and we hope and believe that there is not, except the mystery; and this, in our humble judgment, is a very bad and injurious example.

MASSICOT, or **Masticot**, a preparation of lead. See Lead.

MASTER, one who keeps servants, or employs and pays persons for performing any kind of work.

Perhaps there is no situation in life, the regal station only excepted, in which more responsibility lies, in which greater discretion, judgment, and forbearance are required, than in the conduct of a master; and particularly so should that master happen to be the father of a numerous family, and more numerous servants. In such a situation, every eye, by which he is surrounded, is observant of his conduct; his every action is marked, and his errors of what kind soever, have an effect more or less extensive, according to the different conditions of the mind of the persons by whom he is encircled, and before whom his conduct is conspicuous and impressive. Should he conduct himself tyrannically and oppressively, he may be morally certain that the re-action of such conduct will sometime or other be exemplified in his servants or his children; and, on the contrary, should he be firm, but, at the same time, benevolent, kind, and affectionate, evincing a just sense of his own imperfection, and of the duties which he owes to those more immediately around him, of how much good might he not be the means, of how much happiness might he not be the immediate agent!

MASTER WORT, or *Imperatoria*, in botany, a genus consisting of one species only, the *astrutium*, indigenous to our own country, and found on the banks of rivers. The roots, which have a fragrant smell and a bitterish pungent taste, were formerly in the materia medica, but are now considered of trifling importance; boiled, in a recent state, with lard, they are said to be useful in removing ring-worms.

MASTICATION, the act of chewing. See Chewing.

Mastick, the Syrian. See Marjoram.

MASTICHE, or **Gum Mastiche**, the production of the *pistacia lentiscus* (see Pistachia.) It is brought to this country from the island of Chios, in pale yellowish drops, or tears; it is inodorous, unless when rubbed or heated. It dissolves entirely in ether; in alcohol, about one-fifth remains undissolved. It has been generally regarded as astringent and diuretic, but its virtues are very trifling. The Turks use it for cleansing the teeth, and for giving an agreeable smell to the breath. It is an ingredient in *Eau de Luce.*

Mastiff. See Dog.

MASTOLOGY, the science of mammal, or mammalian animals, which are those that suckle their young. See Zoology.

MATERIA MEDICA, the matter of medicine, or those substances employed in the medical art for curing or alleviating disease.

The various dispensatories of the different medical colleges of Europe, present us with a numerous list of medicines, many of which have little besides custom and long practice to recommend them. Even the last edition of the pharmacopœia of the London College of Physicians, contains more than two hundred simples, and of the preparations from them, upwards of three hundred more. In the present work, we have selected such as are of most importance, and some, indeed, of which the London College takes no notice. But, we cannot entertain a doubt, that for every essential purpose of the healing art, the list of the materia medica may be greatly reduced, without losing any thing in its efficiency or efficacy. We believe that the following, and *some of their compounds*, may be considered as those medicines on which the art of healing chiefly depends.

Acids, acetic
———citric
———muriatic
———nitric
———sulphuric
———tartaric
Alcohol
Aloes
Ammonia
Antimony
Beef
Brandy
Camphor
Castor-oil
Catechu
Cayenne pepper
Chamomile flowers
Colocynth
Eggs
Elaterium
Electricity
Fæces of malt-liquor

Fox-glove
Galvanism
The Gases
Gelatine
Ginger
Gum ammoniac
—— Arabic
—— benzoin
—— guaiacum
—— myrrh
Horse-radish
Ipecacuanha
Iron
Jalap
Lavender
Lead
Lime
Linseed
Magnesia
Meadow-saffron
Mint
Olive-oil
Opium
Pepper-mint
Peruvian-bark
Potash
Quicksilver
Rhubarb
Savin
Scammony
Senna
Silver
Spanish flies
Soda
The spices
Squill
Sugar
Sulphur
Tapioca
Turpentine
Wax
Wine
Zinc

To these may be added the application of leeches, and venæsection, or blood-letting, as curative means. We suppose, however, that most medical practitioners will consider this list as by far too scanty: fashion, routine, and interest, are too often in league, to involve and make mysterious the art of healing.

The articles of the materia medica have been very commonly arranged under different heads, such as emetics, cathartics, diuretics, &c. &c. Such arrangement has its uses, if not abounding with too many subdivisions. One of the latest writers on this subject, Dr. Paris, arranges them thus:

Emetics, cathartics, diuretics, expectorants, diaphoretics, emmenagogues, demulcents, antacids and absorbents, refrigerants, astringents, tonics, stimulants, antispasmodics, narcotics, and anthelmintics.

The *composition* of medicines is usually considered a branch of pharmacy, but for every useful and practical purpose, what we have to offer upon this subject may with propriety be said here.

The objects to be attained, and the resources which are furnished by *medicinal combinations* are as follow: First, *by promoting the action of the basis, or principal medicine*, in combining it with substances which are of *the same nature;* that is, which are *individually* capable of producing the same effects, but with less energy than when in combination with each other. Thus *emetics* are more efficient when composed of ipecacuanha, united with tartarized antimony, or sulphate of zinc, than when they simply consist of any one such substances, in an equivalent dose. *Cathartics*, not only acquire a very great increase of power by combination with each other, but they are at the same time, rendered less irritating in their operation: this fact is exemplified in the *compound extract of colocynth*, which is much more active and manageable than any one of its components, separately taken.

Under the class of *diuretics*, it may be noticed, that whenever a medicine is liable to produce effects different from what we desire, its combination with similar remedies is particularly eligible; by which the action of the basis may be directed and fixed.

In the exhibition of *expectorants*, more is to be gained by the co-operation of these remedies, than can be obtained by any of them being given separately. *Diaphoretics*, and *emmenagogues*, are under the influence of the same law.

There is no class of remedies which receives greater benefit by combination, than *stimulants*, which acquire increased efficacy, and lose, at the same time, much of their acrimony. If, for instance, any one spice, as the dried capsule of the *capsicum*, be taken into the stomach, it will excite a sense of pain and heat; so also will a quantity of pepper, but if an equal quantity of both be given in combination, no such sense of pain is produced, but only a pleasant warmth, with a genial glow over the whole body; and if a greater number of spices be joined together, the chance of pain and inflammation being produced, is still further diminished. This principle is illustrated in the composition of various medicines in the pharmacopœias.

Local stimulants are governed by

the same law; and upon the same principle it is said, that different snuffs, when mixed together, are more grateful.

The operation of bitter tonics is also, by mixing them together, rendered more useful. *Narcotics* and *alteratives*, conform to the same law, but demulcents do not appear, by such combination, to be increased in efficacy.

This law, however, has its limits, and it is easy to perceive that by multiplying the number of ingredients too far, we shall either increase the bulk of the medicine, render it nauseous, or so reduce the dose of each constituent as to destroy the powers of the combination.

It is also of importance to be aware that, in combining medicinal substances, their virtues should be perfectly *similar*, or the most fatal error may be committed. Similarity, however, does not consist in their being arranged under the same head: for squill, calomel, and fox-glove, are diuretics, but they cannot be considered as similar remedies.

Secondly. By combining the basis with substances of a *different nature*, and which do not exert any chemical influence upon it, but are found by experience to be capable of rendering the stomach, or system, or any particular organ, more susceptible of its action. Thus it is, that the system is rendered more susceptible of the influence of mercury, by combining it with antimony and opium. Upon the same principle, *antimonial wine* quickens the operation of saline cathartics; *opium* increases the sudorific powers of *antimony*; and the purgative operation of *jalap* is promoted by *ipecacuanha*.

Thirdly. To correct the operation of the basis, by obviating any unpleasant effects it might be likely to occasion, and which would prevent its intended action, and defeat the objects of its exhibition.

The virtues of the most important remedies are frequently lost, or their powers much diminished, by inattention to the circumstances comprehended in this section. The griping, or nauseating, tendency of some remedies, receives correction by the addition of aromatics, or essential oils; or by small portions of a corresponding tincture: the operation of colocynth is mitigated by camphor, and of senna by tartrate of potash, or alkaline salts.

Fourthly. To obtain the joint operation of two or more medicines, which have different powers, and which are required to obviate different symptoms, or to answer different indications.

In the exhibition of *cathartics*, it frequently happens that the patient's strength will hardly allow of the evacuation: in such a case the addition of iron as a coroborant, is loudly called for: Cheltenham waters offer a natural combination of this character. Again, in the cure of *putrid sore throat*, the use of the bark is indicated, but if the skin be hot and dry, it should be accompanied with an emetic.

Fifthly. To obtain a new and active remedy not afforded by any single substance, either by combining medicines which excite different actions in the stomach and system, in consequence of which *new*, or modified results are produced, instanced in the *compound powder of ipecacuanha*; or by combining substances which have the property of acting chemically upon each other; the result of which is, the formation of *new compounds*, or the *decomposition* of the original constituents, and the developement of their more active elements.

It may be safely asserted that the arm of physic has derived more power and greater energy, from a few chemical combinations, than by all the numerous simple bodies presented to us by nature, or from the various compounds which art has formed, by their intermixture. And it is to the crucible and the alembic that we must look for the future improvement and extension of remedies.

Under this head the class of metals immediately presents itself. With the exception of iron, scarcely one of which in a pure metallic state but is harmless, yet in combination with various substances what powers do they not acquire; what medicines, what poisons do not many of them become!

Sixthly. In combining substances.

between which no other chemical change is induced than a diminution or increase in the *solubilities* of the principles which are the repositories of their medicinal virtues.

This is exemplified in the fact, that, by combining aloes with soap, or an alkaline salt, such as sub-carbonate of potash, we quicken their operation, and remove their tendency to irritate the rectum, which, when given alone, they most commonly do. The *Compound decoction of aloes*, affords also a combination of this kind. The influence of diuretics is also increased by plentiful dilution. Whenever a poisonous substance has been taken into the stomach, care should be taken to avoid every liquid which may be likely to favour its solubility; hence the propriety of that practice to which so much importance has been attached, that of producing vomiting in such cases by the mechanical irritation of the fauces. Destroy the solubility of a poisonous substance, and you will, probably, disarm it of its virulence.

To these rules, how necessary and important soever they may be to the success of a medical prescription, it is very probable that many of our readers will not pay so much attention as it could be wished that they should do; and, therefore, when the domestic prescriber is not certain of the operation of a compound, simplicity in the exhibition of medicine is the safest course.

The perfection of a medical prescription may be defined in three words: it should be *precise*, (in its *directions*,) *concise*, (in its *construction*,) and *decisive*, (in its *operation*.) Where the intention of a medical compound is obscure, its operation will be imbecile.

In preparing medicines, care should be taken that they are not in such large doses as to be disagreeable to the patient, nor in such form as to be inconvenient to be swallowed; and although it is not always easy to make medicine agreeable, yet a little art may do much towards making it less disgusting.

In order to render our work as complete as possible upon the subject of medicine, we here add a translation of some of the most valuable RECIPES from the *Pharmacologia* of Dr. PARIS, a work in deserved estimation.

EMETICS.

Take of wine of ipecacuanha one fluidrachm; tartarized antimony one grain; infusion of chamomile flowers, luke-warm, one fluidounce and a half: mix for a draught.

Take of powder of ipecacuanha half a drachm; of tartarised antimony one grain; of tincture of squills one fluidounce; of distilled water seven fluidounces and a half: mix them, and take immediately four large spoonfuls, and two spoonfuls every ten minutes afterwards, till vomiting is produced.

Take of tartarized antimony two grains; of distilled water four ounces; dissolve. Of this solution two moderate spoonfuls must be taken every fifteen minutes, until vomiting is excited.

CATHARTICS.

Take of compound extract of colocynth one drachm; of purified opium three grains; of oil of nutmegs four drops. Let them be made into a mass, which divide into twelve pills, of which two are to be taken every hour, until two motions are procured. To be taken for *Bilious Colic*.

Take of infusion of senna one fluidounce; of the tinctures of senna and jalap of each one fluidrachm; of tartrate of potash one drachm; of syrup of senna one fluidrachm. Mix for a draught to be taken in the morning fasting.

Take of sulphate of magnesia, and of sulphate of soda, of each half an ounce; of camphor mixture seven fluidounces; of sulphate of iron five grains. Let them be made a mixture, of which two large spoonfuls are to be taken twice a day.

Take of castor oil half an ounce; of the yolk of an egg a sufficient quantity; rub them together, and add of syrup of white poppies two fluidrachms; of tincture of opium five drops. Let them be made a draught, to be taken every three or four hours. *To be taken in colic arising from the ingestion of lead.*

Take of confection of senna one

ounce and a half; of precipitated sulphur half an ounce; of syrup of roses a sufficient quantity to make an electuary. The bigness of a nutmeg to be taken three or four times a day, until the bowels are sufficiently relaxed. For the *Piles.*

Take of tartarised soda two drachms; of carbonate of soda one drachm; of pure water one fluidounce and a half; let them be made into a draught with a large spoonful of lemon-juice. To be taken in the morning daily, and whilst it is in the height of effervescence.

DIURETICS.

Take of dried squill root, in powder, three grains; of powdered opium half a grain; of powdered cinnamon bark ten grains. Mix for a powder to be taken twice a day.

Take of sub-carbonate of potash ten grains; of compound infusion of gention half a drachm; of compound spirit of ether half a drachm; of tincture of cinnamon one fluidrachm. Mix for a draught. *Diuretic and stimulant.*

Take of pills of squill one drachm; of sub-muriate of mercury five grains. mix, and divide into fifteen pills, two of which are to be taken every night.

Take of dried sub-carbonate of soda one drachm; of hard soap one scruple; of oil of juniper ten drops; of syrup of ginger a sufficient quantity to form a mass, which divide into thirty pills, three of which are to be taken every day. *For the gravel in the kidneys.*

Take of solution of acetate of ammonia one fluidounce; of acetate of potash one drachm. Mix for a draught, to be taken three times a day.

EXPECTORANTS.

Take of dried squill root in powder eight grains; of powdered ipecacuanha five grains; of camphor one scruple; of antimonial powder six grains; of lump sugar in powder one drachm. Mix them into a powder, which divide into four equal parts, one of which is to be taken twice a day, in a draught of barley water.

Take of mixture of ammoniacum, and cinnamon water, of each two fluidounces: of syrup of tolu half a fluidounce; of tincture of castor two fluidrachms; of tincture of opium five drops. Mix them. Of this mixture one large spoonful is a dose, which is to be repeated as occasion may require. *Expectorant and antispasmodic.* For the hooping-cough.

DIAPHORETICS.

Take of camphor mixture one fluidounce and a half; of solution of acetate of ammonia half a fluidounce; of solution of tartarized antimony twenty drops; of tincture of opium ten drops. Mix for a draught.

Take of compound powder of ipecacuanha fifteen grains: of compound powder of tragacanth two scruples. Mix and divide into four equal parts; one of which may be taken every hour.

Take of compound powder of ipecacuanha fifteen grains; of antimonial powder two grains. Mix for a powder to be taken going to bed, drinking afterwards some small, lukewarm draught.

Take of powdered guaiacum half a scruple; of compound powder of ipecacuanha five grains; of conserve of roses a sufficient quantity to make a bolus. One dose.

EMMENAGOGUES.

Take of the dried leaves of savin in powder, of ginger root in powder, of each half a scruple; of sulphate of potash, in powder, half a drachm. Mix for a powder, to be taken twice a day.

Take of tincture of muriate of iron, of compound tincture of aloes, of each half a fluidounce; of tincture of castor two fluidrachms. Mix. A tea-spoonful to be taken in a glass of the infusion of chamomile flowers three times a day. *Emmenagogue and Antispasmodic.*

DEMULCENTS.

Take of oil of almonds one fluidounce; of gum Arabic, in powder, three drachms; rub them together, and then add gradually seven ounces of distilled water, and half a fluidounce of syrup of red poppies. Two large spoonfuls to be taken three or four times a day.

Take of spermaceti two drachms; one half of the yolk of an egg; of syrup half a fluidounce; of cinnamon water two fluidounces; of distilled water four fluidounces. Mix them. A large spoonful to be taken frequently.

ANTACIDS and ABSORBENTS.

Take of solution of potash two fluidrachms; of lime water six fluidounces. Mix. Let the patient who is troubled with acid in the stomach take one or two large spoonfuls in a cup of beef broth.

Take of magnesia half a drachm; of peppermint water two fluidounces and a half; of compound spirit of lavender half a fluidrachm; spirit of caraway four fluidrachms; syrup of ginger two fluidrachms. Mix. A spoonful to be taken occasionally. *Antacid and carminative.*

REFRIGERANTS.

Take of nitrate of potash, in powder, fifteen grains, to be taken immediately after it is dissolved, in a glass of very cold water.

Take of muriatic acid one fluidrachm; of barley water one pint; of syrup sufficient to make it agreeably sour and pleasant to the taste. It may be taken for a common drink, and as much as is requisite to quench the thirst. Given in *Typhus, and other fevers.*

ASTRINGENTS.

Take of infusion of Angustura bark one fluidounce; of tincture of catechu one fluidrachm; of powdered ipecacuanha three grains; of powdered opium half a grain. Mix for a draught.

TONICS.

Take of ammoniated iron one scruple; of extract of gentian and extract of aloes, of each half a drachm; beat them together into a mass, and divide it into thirty pills, of which two may be taken three times a day.

Take of decoction of Peruvian bark six ounces; of tincture of Peruvian bark two fluidrachms; of aromatic confection ten grains; of aromatic spirit of ammonia ten drops. Mix. Two large spoonfuls to be taken daily.

Take of Peruvian bark, in powder, half an ounce; sulphate of magnesia six drachms; rub them together, and divide into four parts, one to be taken every two hours. For *Intermittents.*

Take of carbonate of iron five grains; of powdered valerian half a drachm; syrup of ginger sufficient to make a bolus.

STIMULANTS.

Take of carbonate of ammonia half a drachm; of peppermint water seven ounces; of syrup of orange peel half a fluidounce. An eighth part to be taken for a dose in languors.

Take of bruised mustard seed, and of horse radish root, sliced, of each six drachms; of boiling water one pint. Macerate for an hour and strain. Take of the strained liquor seven fluidounces; of aromatic spirit of ammonia half a fluidrachm; of spirit of pimento half a fluidounce. Mix. Two large spoonfuls to be taken three times a day. For *Palsy.*

Take of camphor mixture, one fluidounce; of spirit of sulphuric ether, two fluidrachms; of compound tincture of cardamoms, four fluidrachms; spirit of aniseed, six fluidrachms; oil of caraway twelve drops; syrup of ginger two fluidrachms; of peppermint-water six fluidounces. Mix. Two large spoonfuls to be taken according to the urgency of the symptoms. For *flatulent colic.*

ANTISPASMODICS.

Take of tincture of castor one fluidrachm; of sulphuric ether ten drops; of tincture of opium seven drops; of cinnamon-water one fluidounce and a half. Mix for a draught, to be taken three times a day.

Take of powdered valerian-root one scruple; of ammoniated tincture of valerian, and of tincture of castor, of each one fluidrachm; of camphor mixture twelve fluidrachms. Mix for a draught to be taken three times a day.

NARCOTICS.

Take of camphor twelve grains; of extract of henbane eighteen grains. Let them be made into twelve pills, three of which are to be taken every night.

Take of extract of hemlock one drachm; of hemlock leaves dried and powdered, a sufficient quantity to make pills, each pill weighing two grains. In the beginning, the patient should take one pill for a dose, at morning and night; afterwards two, then three, and lastly, the dose should be increased to as much as he can bear. Given in *scrofula, schirrus, and cancer.*

Take of opium four grains; of extract of henbane and of extract of hemlock, of each, fifteen grains. Let them be made into a mass, and divided into six pills, of which one should be taken every night.

Take of camphor mixture one fluidounce; of compound spirit of ether half a fluidrachm; of tincture of opium ten drops; of syrup of white poppies one fluidrachm. Mix, for a draught to be taken at bed-time.

Take of infusion of linseed six fluidounces; of tincture of opium one fluidrachm. Mix *for a clyster.*

ANTHELMINTICS.

Take of gamboge eight grains; of submuriate of mercury five grains; mucilage of gum Arabic sufficient to form a bolus, to be taken in the morning. For the *Tape-worm.*

Take of muriate of soda two ounces; cochineal two scruples. Let them be powdered together. Half a drachm is a dose, to be taken in the morning.

Take of camphor (dissolved in spirit of wine) one drachm; of olive-oil, two fluidounces. Mix for a clyster, which should be administered every third night, three different times; it should then be repeated every other night if there be occasion, four successive times. For the worms called *Ascarides.*

We have thus given a short view of the materia medica, and of the most eligible mode of combining medicines. It can be hardly expected that the uninformed reader should be able at once, to apply these different recipes to the purposes for which they are intended; but we venture to hope that after an attentive study of our work, most of the forms here exhibited, may be made available for the alleviation of disease; or even varied to suit the exigence of the case.

We cannot quit this subject without impressing upon the reader's attention, the *great responsibility of giving medicine,* at all times; and that it is much better in disease, to do nothing, than to give that, of the efficacy and utility of which we are not fully aware. In truth, as much knowledge is required to determine when medicine ought not, as when it ought, to be given. The giving of it wantonly, or heedlessly, deserves, therefore, severe reprehension.

It may be opportune here to observe, that the *doses* of medicinal substances must be varied according to the nature of the disease, the constitution, and age of the patient, &c. &c.; and that although we have given some general directions relative to this subject, under the article DOSE, and also under every separate article of the materia medica; yet, no rules which can be laid down, will embrace all the variety of cases in which it will be necessary to vary the mode and quantity in their administration. In such variation does much of the art of medicine consist, and which is best acquired by experience. Nothing, however, is more erroneous than the supposition, that by increasing the dose of a medicine, we increase its efficacy, whereas it should be borne in mind, that many medicines differ from poisons, not in their *nature,* but merely in their *dose.* Thus it is well known, that corrosive sublimate, and even arsenic, in small doses, in the hands of the skilful, are powerful medicines, but in large doses, they are destructive poisons. Five grains of camphor act as a mild sedative, and slight diaphoretic, but twenty grains induce nausea, and act as a stimulant. So again, opium in too large doses, instead of promoting, prevents sleep, and rather stimulates the bowels, than acts as a narcotic; and in still larger doses, it is a destructive poison. Again, two ounces of many of the purging neutral salts, are apt to be emetic, one ounce even of alum, to be cathartic, and two drachms to be refrigerant; in like manner, the preparations of antimony, either vomit, purge, sweat, or are poisons, according to the quantity exhibited.

The *operation* of medicines is also influenced by certain general circumstances, which should be constantly kept in mind when we determine the dose. These circumstances are, *age, sex, temperament, strength of the patient,* habit, diet, climate, duration of the disease, state of the stomach, *idiosyncrasy,* perhaps the most important of all; and the *variable activity of the medicinal substance itself*: if the medicine be of the animal or vegetable kind, its variability is most common.

Brandy, for example, a few ounces of which, taken in a state of health, will produce intoxication, when given on proper occasions, even in large doses, produces no such effect. See BRANDY.

Women, in general, require smaller doses than men. Habit, or the continued use of a medicine, generally diminishes its power, although saline cathartics appear to be an exception. Indeed, such effects have many medicines, which are habitually taken, that they frequently become of no use whatever, or are injurious. In this respect, the continued use of some medicines, and the continued use of some kinds of food, appear to be very nearly allied, so that variety in both, is often absolutely necessary to promote health.

We have mentioned under the article DOSE, the diminished gradation for children, but children will bear larger doses of *calomel* than even adults; and many medicines which do not affect adults, although exhibited in considerable quantities, prove injurious even in small doses, to children.

We feel that we have extended this article to considerable length; but, as it is most probably the last in our work, in which we shall have occasion to expatiate on the powers and operations of medicines, we persuade ourselves, that in our anxiety to guard our readers in every possible way in their *administration of medicines,* it will be found, as it is intended, a useful epitome of the art. See PHARMACY.

Matrimony. See LOVE, MARRIAGE, and HUSBAND and WIFE.

MATTER, in physiology, whatever is extended, and capable of making resistance hence, because all bodies, whether solid or fluid, are extended, and do resist, we conclude that they are material, or made up of matter. That matter is one and the same thing in all bodies, and all its variety arises from the various forms and shapes in which we see it, is very probable, and may be concluded from a general observation of the procedure of nature, in the generation and destruction of bodies. Matter is often spoken of in philosophy, in opposition to mind, or our intellectual part. See MIND.

Matweed, the sea. See REED.

MATWEED, MATGRASS, or *Nardus,* a genus consisting of three species, the *striata,* common to our heaths, the *aristata,* indigenous to the south of Europe, and the *ciliaris,* with grassy, flat, leaves. The first species is eaten by horses and goats, but rejected by cows and sheep. It is, moreover, a troublesome weed.

Maucauco. See MACAUCO.

Maw-seed. See POPPY.

MAXILLA, in anatomy, the jaw. The lower jaw is called *maxilla inferior,* the upper jaw *maxilla superior.*

May, in botany. See THORN.

MAY-APPLE, or *Podophyllum,* a genus of creeping plants, consisting of two species, natives of North America. The calyx is three-leaved, petals nine, berry one-celled, crowned with a stigma.

MAY-FLY, DAY-FLY, or *Ephemeris,* a genus of insects consisting of thirty-one species. These short-lived animals are found every where about waters in the summer, and in their perfect state seldom live above a day; some of them not an hour, during which time they perform all the functions of life, and answer all the purposes of nature. The larva lives under water, and is eaten by trout, and other fishes. Eight species are found in our own country: the *vulgata,* or Common May-fly has reticulate wings, spotted with brown; body yellowish black: the female lays her eggs over water, which sink to the bottom by their own specific gravity.

May-lily. See LILY of the VALLEY.

MAY-WEED, or *Cotula,* a genus of plants, consisting of twenty-two species, widely scattered over the globe, but chiefly Cape plants, or the south of Europe; they are all herbaceous annuals, about eight inches high, and adorned commonly with yellow flowers.

A species of chamomile, the *cotula fœtida*, is also called may-weed.

MAZZARD, a species of wild cherry, small, and of a black colour.

MEAD, a vinous liquor, prepared from honey and water. One of the best methods of making this liquor is the following: into twelve gallons of water, slip the whites of six eggs; mix them well together, and to the mixture add twenty pounds of honey. Let the liquor boil an hour, and when boiled, add cinnamon, ginger, cloves, mace, and rosemary. As soon as it is cold, put a spoonful of yeast to it, and put it into a cask, keeping the vessel filled as it works; when it has done working, stop it up close, and when fine, bottle it off for use.

Another method: Put three pounds of the finest honey, to one gallon of water, and two lemon peels; boil it half an hour, letting it be well scummed; put in while boiling, the lemon peel: work it with yeast; then put the whole to stand for five or six months; when it may be bottled off. If it is to be kept for several years, four pounds of honey should be put to each gallon of water.

Mead is doubtless an agreeable liquor, but it generally contains a portion of undecomposed sugar, which is always inconvenient to dyspeptic patients: rarely, indeed, will any of the sweet wines agree with a diseased stomach.

MEAD, or **MEADOW**, generally signifies pasture, or grass-land, that is annually mown for hay.

There are three kinds of meadows; those on the banks of streams; on the upland, or more elevated grounds; and bog meadow.

Were the first kind judiciously inundated, when the stream is turbid with earth or manure washed from it from the surrounding country, they would become exceedingly fertile; but as they are rarely protected by embankments, and frequently overflow at improper seasons, the best grasses are destroyed, and hence the herbage is often very indifferent. The ordinary produce of each meadow is, about one ton of hay per acre.

The upland meadows of Middlesex, by being manured with the rich soil of the metropolis, are of the first quality. The manure is almost universally laid on such land, about the month of October, while it is sufficiently dry to bear the drawing of loaded carts without injury, and when the heat of the day is so moderated, as not to exhale the volatile parts of the dung.

Meadow land for cows is, generally, mown two, or even three times in the summer. The grass is scarcely permitted to stand till the seedling stems fully rise, the great object in this case being to procure hay of a soft grass quality. It is generally mown the first time each season, early in May, from two to four weeks sooner than it would be advisable to do, if the hay were intended for the support of horses, and for fattening cattle. In all other cases, good farmers never think of mowing their meadow lands more than once a year, unless they have, or can easily procure, dung sufficient to cover the ground immediately after the second mowing. In general, however, when hay for horses and fat cattle is the object, it is thought most advisable to mow but once, and to feed all the after grass, with a view of increasing the principal crop of the following year. And, indeed, by mowing land only *once* every year, unless means be taken to manure it well, either by feeding large quantities of horned cattle on it during the winter season, or by other manure, it soon becomes poor and yields but an indifferent quantity as well as quality, of grass. There are some exceptions, however, to this: rich land, which has been a few years inclosed from the access of salt water, does not suffer by annual mowing, for many years, any deterioration; irrigated meadows form also another exception.

In many hilly and pastoral districts

of the Kingdom, bog meadows are still considered by the farmer as an important acquisition. In some cases the grass is so soft that it is difficult to convert it into hay. To prevent its being consolidated in cocks, it must be frequently opened up, and when the weather permits, completely exposed to the sun and wind.

When the natural herbage is of a coarser description, it may be put into small cocks in rather a green, or a damp state, so as to go through the process of sweating, or a slight fermentation. The woody fibres in course hay, are thus rendered more palatable and nutricious, while its condition for becoming fodder, is consideraby improved: but when any warmth becomes preceptible, if the weather will permit, the hay should be spread out, and put into large cocks, the moment it is in a dried state.

In the moister districts of Scotland *hay barns* are necessary, the construction of which is as open as possible, for the purpose of drying as well as preserving hay.

The quantity of hay per acre, on bog and moist meadows, is, of course, exceedingly variable: but in the low land districts of Somersetshire, we have known two tons of prime hay obtained, often from one acre of such land.

Meadows which are designed for hay, and where manure is not to be obtained, will produce the best and most early grass, if *winter hained*, that is, not fed by animals during the winter: in such cases it may be cut early, and with much less danger of impoverishing the land. See HAY.

MEADOW GRASS, or *Poa*, a genus of plants, consisting of sixty-five species, scattered over the globe, sixteen of which are common to our own country: most of them forming an excellent and agreeable food for cattle. The following are the sorts chiefly cultivated; the *pratensis*, or Smooth-stalked meadow grass, with a diffuse panicle and spikelets, four-flowered. The *trivialis*, or Rough-stalked meadow grass, with diffuse panicle and spikelets, three-flowered. The *aquatica*, or Water-reed grass, with a branched, loose, erect panicle and spikelets, six-flowered, linear. This is the largest of the British grasses, rising in marshy soils, and in waters, to the height of five or six feet: most cattle are fond of it, and will often so far plunge into stagnant waters for it, as to endanger their lives.

MEADOW-RUE, or *Thalictrum*, a genus of plants, comprehending twenty-three species, chiefly natives of Europe, a few of Asia and America: the following are indigenous to our own country: the *alpinum*, or Alpine meadow-rue; the *majus*, or Larger meadow-rue, with drooping flowers, found on our bushy hills; the *minus*, or Lesser meadow-rue, with panicled drooping flowers, found in our pastures; and the *flavum*, or Common yellow meadow-rue, with erect flowers, found in our meadows: the *rhabarbarum pauperum*, of the old dispensatories. The root is said to be aperient and stomachic, and to approach in those respects the virtues of rhubarb.

One or two of these, and several of the exotic kinds, are cultivated in our gardens.

MEADOW SAFFRON, or *Colchicum*, a genus of plants, containing three species: the *montanum*, a native of Spain;—the *variegatum*, a native of the Greek islands;—and the

Autumnale, with flat lanceolate leaves, common to the meadows of our own country. It is a perennial plant. The bulb is double, solid, large, egg-shaped, and covered with a brown membranous coat. The leaves, which appear in spring, are radical and spear-shaped. They wither away entirely before the end of summer, and are succeeded by the flower, which appears in Autumn, without any leaves. There is no calyx. The corolla, which is of a pale lilac colour, mottled with deeper lilac, springs directly from the bulb, and consists of a tube about five inches long, two-thirds of which are sunk in the ground. The fruit is a three-lobed, three-celled capsule.

The bulb is the part used medicinally; it is in greatest perfection after the leaves disappear in July, and before the flowers appear in Autumn, between which periods it should be taken up. It yields, when mature, on being cut transversely, a milky-looking acrid juice, which excoriates the fingers. It is used in infusions, either in wine, or in spirit. A deposit forms in the wine, which is extremely acrid, exciting nausea and griping, but it is not essential to the virtue of the medicine; hence the bottle in which the medicine is kept, should never be shaken when it is poured out. The recent bulb has scarcely any odour; but when dug up at the proper season, its taste is bitter, hot, extremely acrid, producing a burning sensation in the stomach, even when taken in small quantity. This acrimony depends on an essential oil, which is dissipated by drying. Vinegar and wine best extract its active qualities.

Meadow saffron possesses diuretic, purgative, and narcotic properties. In gout its efficacy has been fully ascertained; (See GOUT.) and in allaying the pain, it may be almost said to possess a specific property. It operates on the bowels chiefly, and the nervous system.

The dose in substance, is from half a grain to three grains of the recent bulb, made into a pill.

The WINE OF MEADOW SAFFRON is made thus:

Take of the fresh root of meadow saffron sliced, one pound; of sherry wine one pint. Macerate for three days and strain. When wanted for use, the clear wine only is to be poured off. The dose is from twenty to sixty drops. It is best to begin with the smallest quantity at first. The above is the form recommended by Sir EDWARD HOME. See QUACK MEDICINES and RHEUMATISM.

Vinegar of meadow saffron: take of the root, (bulbs) of fresh meadow saffron sliced one ounce; of acetic acid, distilled vinegar, one pint; proof spirit a fluidounce. Macerate the meadow saffron root with the vinegar, in a covered glass vessel, for twenty-four hours, then express, and set the liquor aside, that the feculencies may subside; lastly, add the spirit to the clear liquor.

It is given as a diuretic in ascites and hydrothorax; it may be also given in gout. The dose is from half a fluidrachm to one fluidrachm, united with honey, or in any bland fluid.

The flowers of meadow saffron are said to be poisonous to cattle.

For the treatment of persons who have taken this medicine in an over dose, see POISONS.

Meadow Saxifrage. See SAXIFRAGE.

Meadow sweet. See DROPWORT.

Meal. See BREAD and FLOUR.

Meals. See BREAKFAST, DINNER, and SUPPER.

Mealy Tree. See GUELDER-ROSE.

MEASE, five hundred herrings.

MEASLES, or *Rubeola*, a contagious and eruptive disease, attacking the constitution, but once. It is distinguished by considerable fever, preceded by shivering, attended with thirst, hoarseness, a frequent, hoarse, dry, cough, and often, with some difficulty of breathing. The eye-lids are also somewhat swelled; the eyes a little inflamed, discharging tears, frequent sneezing, and other catarrhal symptoms, indicating an inflammatory disease, which it strictly is. It is also attended with drowsiness. The eruption, commonly appears on the skin the fourth day, first on the face, and then successively on the lower parts of the body; it is at first in small red pimples, but soon after a number of these appear in clusters; it retains its redness, or increases for two days; on the third, the redness changes to a brownish red, and in a day or two more it disappears, a mealy scaling off of the skin taking place. During the whole time of the eruption, the face is somewhat turgid, but seldom considerably swelled.

Sometimes, after the eruption has appeared, the fever ceases entirely; but more commonly it continues, or is increased, and does not cease till after the peeling, or desquamation of the skin, and even then it does not always cease; and the cough, very commonly, continues much longer.. It sometimes assumes the appearance of an inflammation of the lungs, and which most probably it is.

In ordinary cases, keeping the patient cool, avoiding all animal food, and every kind of fermented, or stimulating liquor, with an occasional dose of Epsom salts, will be sufficient to obviate the inconveniences attendant on this disease; but when it is more violent, it will require an experienced medical attendant.

Bleeding is one of the chief remedies to which recourse must be had. It is to be employed more or less, according to the urgency of the symptoms, cough, and difficulty of breathing: although cooling purgatives will often be of service. The dry cough may be alleviated by the use of demulcents; but blisters applied to the sternum, particularly after the inflammatory stage is passed, are excellent to remove the oppression of the breathing. Acidulated drinks, such as lemonade, tamarind tea, &c. may be taken in almost every stage of the complaint with advantage, but particularly whilst any symptoms of inflammation remain. In the latter stages of the disease, where there is thirst, with great debility, and want of appetite, we have known rough, strong, old cider, given to children to allay the thirst, to have an excellent effect, and to supersede for some days the use of any other aliment.

Whenever, therefore, children are attacked by this complaint, and they are more commonly attacked by it than adults, an exposure to cool air, the avoiding of all animal food, and a saline purge, such as a dose of Epsom, or Glauber's salts, given at the first attack, promise the best ultimate result of the disease.

It is not in general fatal, but it may be made so by a hot regimen, improper food, and a confined, close situation; hence it is very often fatal in the confined dwellings of the poor, in crowded towns, and hence the necessity of *ventilation* and pure air. See CONTAGION.

MEASURE, in a legal and commercial sense, denotes a certain proportion, or quantity, of any commodity, whether dry or liquid. The instruments by which these quantities are ascertained, are called measures, an account of which will be found under their different names in the order of the alphabet. See PECK, BUSHEL, GALLON, ELL, YARD, &c.

Measures are either longitudinal, as an *inch*, *foot*, *&c.* or of capacity for both dry and liquid articles, as *peck*, *pint*, *&c.*

The measures of capacity are in this country very different in different places, producing much inconvenience and uncertainty. See BUSHEL.

MEAT. See FIBRIN and FLESH.

MECHANICS, that branch of practical mathematics, which considers motion and the moving powers, their nature and laws, with their effects on machines. It is to this science that our manufactures are so deeply indebted for their present improvement, state, and great powers of dispatch. See MANUFACTURES.

MECHOACAN, the root of an American species of the convolvulus, formerly in the materia medica, but unimportant, it being now superseded by jalap.

MECONIUM, in anatomy, the black thick excrement discharged by the child shortly after its birth.

Meconium is also a name formerly given to the dried juice of the white poppy. It was similar in its properties to opium.

MEDIASTINUM, in anatomy, a double membrane, formed by a duplicature of the pleura, and dividing the thorax into two parts.

Medicago, or *Medick*. See LUCERN.

MEDICINE, the art or science of curing diseases.

Considerable difference of opinion has existed, and still continues to exist, relative to the theory of this important art. Nor can we be expected to settle the discordancies. Whilst on the one hand, BROWN, DARWIN, and their followers, contend, that two orders only of general diseases are to be found, others seem to consider every disease occurring in the individual, as *sui generis*, or one to be treated according to its peculiar symptoms, and not as being referable to any order. It must be admitted, however, that the most abundant evidence is in favour of the outlines of the Brunonian system. This system is not that which has obtained professedly among the medical practitioners of Great Britain; and it was unfortunate for it, that the personal character of its author was by no means favourable to its general acceptance; but we cannot agree with a respectable modern medical writer, that it is now nearly fallen into deserved oblivion. On the contrary, unless we have greatly mistaken the medical practice of this country, although our physicians quote the name of CULLEN, they, in innumerable instances, act upon the system, if not the authority, of BROWN. It is true Brown's system has overturned, or attempts to overturn, that ingenious, and to all practical purposes, useless classification, which Cullen, with so much parade of learning, attempts to teach; but we think that there is not one candid medical professor in the world, who will deny the merit of simplicity to Brown's, and of complexity and unintelligibility to Cullen's system. This is an age in which men are to be no longer deceived by names, by learned terms, or the *dicta* of the academician: and even MEDICINE, in her strong hold of mystery and academic pomp, must ultimately give way to common sense and the knowledge which is abroad.

Whilst we make these comments, we are aware, that it would be much more to our purpose, in a Family Cyclopædia, to lay down some unerring outlines, by which the practice of this important art could be regulated; but we are obliged to confess, that if it be not found in Brown's system, it is to be found no where else; that it is invariably to be found in his system, we are, however, neither so stupid as to believe nor to assert. At the same time we think that common, as well as good sense, must discover in the diseases which afflict mankind, innumerable corroborations of the chief outlines of Brown's theory. As we have given a concise account of this theory under our article BRUNONIAN SYSTEM, we need not enlarge upon it again here; and as we know no other theory which can be practically useful to our readers, we have nothing further to add than merely to refer them in the *practice* of medicine, which is certainly of the greatest importance, to the mode of treatment of the several diseases in the order of the alphabet; and to ELECTRICITY, EXCITABILITY, EXCITEMENT, GALVANISM, IRRITABILITY, MATERIA MEDICA, &c. &c.

MEDICINE CHEST, a chest divided into various compartments, to hold bottles, &c. for the purpose of containing medicine. Every family should be provided with one of these chests, as they are, on every account, convenient, and are usually made so as to be portable. They should always be furnished with a lock, to prevent indiscreet persons from having access to them, and they should contain such medicines as are more immediately useful in a family; such as Epsom salts, magnesia, calomel, conserve of roses, compound colocynth pills, Peruvian bark, rhubarb, senna, gum arabic, chamomile flowers, carbonate of ammonia, compound spirit of ammonia, solution of carbonate of ammonia, compound spirit of lavender, oil of cinnamon, oil of peppermint; (both these for making cinnamon and peppermint water,) compound tincture of benjamin, tincture of opium, paregoric elixir, styptic tincture, linseed and olive oil, castor oil, lime water, lead plaster, galbanum plaster, red precipitate, yellow basilicon, calamine cerate, Spanish flies, or blister plaster, savin cerate, spermaceti cerate, lint, leather, and a bolus knife; tapioca, sago, arrow root, pearl barley, and isinglass; a clyster pipe and bladder, and an ivory syringe. See PHARMACY.

MEDLAR, or *Mespilus*, a genus which would be with more propriety arranged together, under *cratægus*, or THORN, and to which all the medlars in fact belong. It consists altogether of between twenty and thirty species, chiefly North America, a few European and Asiatic plants; we shall only notice here the following:

The *Germanica*, or common medlar, is unarmed, having lanceolate, somewhat downy leaves and solitary flowers, it is said to be found wild in our hedges, but this we doubt. It is usually propagated by grafting on the common white thorn (see THORN.) The fruit is well known, the size of a small apple, and not eatable till it is apparently about to decay: it is generally plucked from the tree in October, and when eaten, is said to be astringent, but this is, we think, incorrect.

The *Japonica*, or Lo-quat, is a species of the medlar, lately cultivated with success in this country. It is a native of Japan and the southern parts of China. In its natural state, it is a tree of some magnitude, and great beauty. The flowers have a delicate scent, resembling the hawthorn flower; the shape of the fruit is oval, somewhat like a small apricot; it is of a very delicate, pale orange hue, partially tinted with red, and covered with a fine down; it is about one inch and a quarter by one inch in diameter. Although it may be kept with care, in the open ground in this country, it requires the heat of a stove to make it bear fruit.

The *chamæ-mespilus*, is unarmed, and has ovate, acutely serrate, glabrous leaves. This plant bears a red fruit, which is called Downy medlar, or bastard quince.

The *cotoneaster*, or Dwarf quince.

For the rest of the species of this genus worthy of note, see THORN.

MEDULLA, the marrow; it implies also the pith of vegetables.

Medulla spinalis. See SPINAL MARROW.

MEDULLA OBLONGATA, in anatomy a medullary continuation of the under part of the cerebrum and cerebellum, connecting the brain with the spinal marrow. See BRAIN.

MEDUSA, in zoology, a genus of the class worms, having a gelatinous orbicular body, and generally flat underneath. The gelatinous mass constituting the body, is of different figures, furnished with arms, or tentacular processes, proceeding from the lower surface; the larger species when touched, cause a slight tingling and redness, and are usually denominated sea-nettles. They are supposed to constitute the chief food of cetaceous mammals; most of them shine with great splendor in the water. Forty-four species have been described; the greater number with a small body; a few with ciliate ribs. They are scattered over the waters of the globe; ten of them common to our own coast. Some contract into the shape of a pigeon's egg, others an apple, a nutmeg, or half a cherry. Their colour is generally blueish, reddish, or yellowish brown; texture transparent or hyaline. Some of them are very splendid in the water, especially the *noctiluca*, an inhabitant of the Atlantic and Mediterranean seas; it wanders in large groups, illumining the water; and if shaken in sea-water it emits considerable sparks of light.

MELANCHOLY, a disease in which the mind is affected with gloomy, sad, and painful emotions, or with some one painful emotion, and arising apparently from inadequate causes; but which, nevertheless, originates either in some affection of the brain, and then is usually a species of insanity; or from some disease in the stomach, or other viscera, attended with dyspepsia, and is, in such case, usually denominated hypochondriasis. The cure of melancholy must, of course, depend upon its cause, and the order of diseases to which it might belong. See HYPOCHONDRIASIS, and INSANITY.

Melasses. See SUGAR.

MELIC-GRASS, ROPE-GRASS, or *Melica*, a genus of plants comprising nine species, natives of Europe, the Cape, or South America; three common to the woods, mountains, or bogs, of our own country. The species most worthy of notice is the *nutans*, which grows wild on our mountains, and is used in the Hebrides, as a material for ropes for fishing-nets, as it will remain long in the water without rotting.

MELILOT, or *Trifolium melilotus officinalis*. A species of Trefoil, formerly in the materia medica, and distinguished by its strong and peculiar smell, but it is of very trifling efficacy.

Mellilite. See BITUMEN.

Melon. See CUCUMBER.

Melon, the water, See GOURD.

MEMBRANE, in anatomy, a thin expanded substance, composed of cellular texture, whose elastic fibres are so arranged, and woven together, as to allow of great pliability. The membranes of the body are various, such are the skin, peritoneum, pleura, dura mater, &c. &c.

Memorandum. See COMMON-PLACE BOOK.

MEMORY, that faculty of the mind which consists in the repetition or revival of impressions or ideas previously received.

The memory is one of those fundamental powers of the mind without which there could be no intellectual operation. The comparing faculty could not exist without memory, and hence, where the memory is weak, the judgment must be more or less defective. The memory may, however, be much improved by practice, and the introduction of proper habits.

The memory of some persons is surprisingly tenacious; yet there is a constant disposition in the mind to lose the impressions which we have received, unless they are occasionally revived by our attention being turned to the objects, or to similar ones, which originally produced them. Those ideas which are often refreshed by a frequent return of the objects or actions which produce them, fix themselves best in the memory, and remain longest there. And the impressions of *sensible* objects are, in general, much better remembered than those of purely mental ones. Thus, when we *read* a description of a plant, or of a flower, or of a machine, in a book, we shall not remember either of them so well as we shall when they are *seen* by us.

It is the same when we *read* a tragedy abounding in fine thought, and striking incident, but when we *see* it performed on the stage by living characters, the impressions which we receive from it, are much more vigorous and lasting. The same holds good in the acquisition of many sciences: and for this reason, they are taught much better by lectures, with exemplification, than by silent and solitary reading. Hence also reading aloud, is a great help to memory.

Attention and *repetition* are, therefore, essential to the improvement of the memory; and when men complain of a deficiency of this faculty, it will be often found to be nothing more than a neglect and inattention to particular subjects concerning which they have not interested themselves. In truth, to expect to retain in the memory any art or science without effort, and without frequent repetition, is little less than absurd.

To assist the memory many methods have been proposed, besides the common practice of making memorandums, which every person who can read and write is in the habit of doing; they are, for the most part, ineffectual. The best way to obtain a good memory is doubtless by a constant and moderate exercise of it, by living temperately, not only in eating, drinking, and sleep, but in a due employment and exercise of all the animal functions. Intemperance of all kinds, and excess of passion, are exceedingly prejudicial to the memory, so that we rarely meet with an intemperate person, whose memory is clear and tenacious.

MENORRHAGIA, an immoderate flow of the menses. See MENSTRUATION.

Menses. See MENSTRUATION.

MENSTRUATION. From the uterus of every healthy woman who is not in a state of pregnancy, or who does not give suck, there is a discharge of a fluid resembling blood, at certain periods, from the time of puberty, to the approach of old age; and from the periods or returns of this discharge being very often monthly, it is called menstruation. There are, however, many exceptions to this definition. It is said, that some women never menstruate; some menstruate while they continue to give suck; and others are said to menstruate during pregnancy; some are said to menstruate in early infancy, and others in old age: but such discharges may, with more propriety, be called morbid: the definition, therefore, is generally correct.

At whatever time of life this discharge comes on, a female is said to be at puberty. The early or late appearance of this discharge may depend on the climate, the constitution, the mode of life, food, and upon the manners of those with whom young females associate. In Greece, and other warm countries, girls begin to menstruate at eight, nine, and ten years of age; but as we advance to the northern climates there is a gradual protraction of the time till we come to Lapland, where the period is considerably later, the discharge in smaller quantity, at long intervals, and sometimes only in the summer.

In this country, the commencement of menstruation is usually from the fourteenth to the eighteenth year, and sometimes at a later period, without any signs of disease; but a luxurious education, sleeping on down beds, sitting in hot rooms, will induce this discharge at a more earlier period. The usual period of its cessation in this climate is between the age of forty and fifty; but sometimes much later. Women who do not menstruate do not bear children.

In general, where a young person uses a proper quantity of exercise in the open air, and is otherwise regular in her habits, this discharge begins without inconvenience, and continues its periodical course, with few if any interruptions, till marriage. But when there is either a weakness in the constitution itself, or bad habits are induced, an obstruction of this customary and natural evacuation takes place, and disease of a serious nature is often the result. This disease is usually called *Amenorrhœa*, of which CHLOROSIS is a species, see that article. The powder of the leaves of savine in this complaint is a powerful remedy, and also its essential oil. See JUNIPER. It is said that, in menstrual obstructions, bleeding is often an efficient remedy; but we entertain serious doubts relative to the use of this evacuant. What is said under Chlorosis, as well as APPETITE, DYSPEPSIA, and HYSTERIA, is deserving particular attention, and need not therefore be repeated here. The tepid or warm bath may be of considerable service.

Exercise of various kinds in obstructed menstruation, is one of the chief remedies, such as dancing, riding on horseback, &c. proportioned, of course, to the strength and constitution of the patient. In some young females, who have never menstruated, although arrived in other respects at the age of puberty, the hymen is found occasionally, though seldom, imperforated, so that the patient suffers much pain from the distension of the parts, with many strange symptoms and suspicions, injurious to her reputation. In such case, an operation must be performed by a surgeon, to set free the confined contents of the uterus.

Menorrhagia, or an immoderate flux of this evacuation, may be produced by various causes; such as too stimulant food and drink; violent straining of the body; violent exercise, particularly dancing; blows on the abdomen; violent passions; excessive indulgence in sexual intercourse; costiveness; frequent abortions; frequent child-bearing; difficult and tedious labours, &c. Some of these causes are completely within the power of the patient herself, and should be most sedulously attended to; but in this complaint, as well as in suppressed menses, if it become serious and alarming, medical advice should at once be had.

As, however, patients are not always disposed to consult a medical attendant in this complaint, if an excessive discharge has come on, it should be moderated as much as possible by abstaining from all exercise at its access, or during its continuance; by avoiding an erect posture as much as possible; by shunning external heat, warm chambers, and soft beds; by using a light and cooling diet; by an adoption of sexual abstinence, and by obviating costiveness with the gentlest laxatives. See ABORTION, FLUOR-ALBUS, and PARTURITION.

The period of the *cessation of the*

menses is generally considered one of the most critical in female existence, and should be watched with extreme care; more especially is it so where a great departure from the salutary habits of wholesome exercise in the open air has taken place; and where, at the same time, sedentary employment and luxurious living tend to introduce a morbid state of the system, against which we cannot be too much on our guard. At such periods, the bowels should be kept most carefully relaxed; and, most probably, a few ounces of blood may occasionally be taken away, with considerable benefit: the state of the general health must, however, in some degree, determine this. An intelligent female will not fail at such period, to be more guarded in her general habits, and be particularly circumspect as to her food and drink; whatever tends to disturb the functions of the stomach, is peculiarly injurious; and, therefore, the state of that organ demands in this, as well as on many other occasions, particular attention.

MENSTRUUM, a liquid employed as a solvent of various bodies. It is a term used chiefly in chemistry. The principal menstruums are water, acids, vinous spirits, oils, and alkaline liquors.

MERCURY, or Quicksilver. See Quicksilver.

MERCURY, or *Mercurialis*, a genus of plants, consisting of six species, four European, one Cochin Chinese, one a Cape plant; two common to our own wastes and hedges; the *perennis*, or Dog's mercury, with a simple stem, rough leaves, and a creeping root, when very young, is an innoxious esculent; but towards the middle of summer and autumn, highly poisonous; and has often produced great mischief by having been mistaken for chenopody. The *annua*, has glabrous leaves, and a cross-armed stem; it is used as a purgative, under various forms, by the French. See French Mercury.

MERGANSER, or *Mergus*, a genus of birds, consisting of ten species, five of which are common to our own country, the rest natives of Europe or America. The bill is toothed, cylindrical, hooked at the point; nostrils small, oval, in the middle of the bill; feet four toed; the outer toe longest. They are as follow: the *cucullatus*, or Crested merganser, body above brown, beneath white. The *merganser*, or Goosander, is subcrested, white; head, neck, upper part of the breast and wings, glossy black; tail cinereous; feeds on fish; flesh rancid; builds sometimes on trees, but generally among rocks. The *castor*, or Dun-diver, is crested, cinereous. The *serrator*, or Red-breasted merganser, with pendent crest: two other varieties. The *imperialis*, or Imperial goosander, inhabits Sardinia; size of a goose. The *albellus*, Smew, or White nun. The *minutus*, or Minute merganser, fourteen inches and a half long. The *furcifer*, or Fork-tailed merganser. The *fuscus*, or Brown merganser, is crested. The *cœruleus*, or Blue merganser.

These birds, with few exceptions, are of a middle size, between that of a goose and a duck. They swallow, with undistinguishing voracity, fishes by far too large to enter entire into the stomach; and hence, while the one end is digesting in the œsophagus, the other often remains in the throat. They are the most destructive of all birds which plunder the waters: their flesh is, however, very indifferent.

MERINO, a species of sheep, originally reared in Spain, and extremely valuable, for their production of fine wool. See Sheep.

MERIT, in morals, has been usually defined that conduct which deserves reward. The best merit, however, is that which consists in a discharge of duties, and the best reward is the conviction of the understanding that those duties have been performed. At no time, whilst we act virtuously, can we do more than our duty; and a reward for doing that which is our duty is preposterous. Undoubtedly, the performance of most of our duties, is accompanied with pleasurable sensations, and in this sense, virtue is, generally, its own reward: but by setting a high value upon our moral actions, and considering them as such, that they may be performed or not, merely at the will, pleasure, or caprice of the individual, and if they are performed, expecting a reward that justice ought not to demand, the virtue of the action is destroyed; which, though good in itself, as far as concerns the motives of the actor, originates in vice: in other words, it is ambition directed to a selfish and bad end. It is, undoubtedly, pleasant to be rewarded with the approbation of our fellow-men in the discharge of our duties; but our motives are not always so apparent to others, as to ourselves; and if we expect even that species of reward, we shall often be disappointed. The principal reward, therefore, which a good man will expect, and of which he may be sure, is the approbation of his own mind.

Merlin. See FALCON.

Merula. See BLACKBIRD and THRUSH.

MESENTERY, in anatomy, the membraneous viscus in the cavity of the abdomen, attached to the vertebræ of the loins, and to which the intestines adhere. It is formed by a duplicature of the peritonæum, and contains within it adipose membrane, lacteals, lymphatics, glands, arteries, veins, and nerves. Its use is to sustain the intestines in such a manner, that they possess both mobility and firmness; to support and conduct with safety the blood vessels, &c. &c.; to fix the glands, and give an external coat to the intestines.

The mesentery is liable to considerable derangement. In young children, a diseased state of the glands of the mesentery generally precedes or accompanies scrofula, rickets, &c.; one of the distinguishing characteristics of such diseased state is considerable swelling, and distension of the abdomen; we have reason to believe, that this disease is sometimes accompanied with hydrocephalus. Costiveness is a very common attendant; it should be obviated by occasional doses of magnesia and rhubarb; interposing, occasionally, a grain or two of calomel. Air, exercise, and the tepid, or warm bath, with nourishing food, afford the best means for its removal

The *inflammation of the mesentery*, is, it is said, in children, by no means a rare occurrence; but the difficulty of distinguishing it is great. Bleeding, or the application of leeches to the swelled part of the abdomen will be necessary. Light, and slightly stimulating food, such as barley water, sweet whey, &c. should be given.

MESOCOLON, in anatomy, that portion of the mesentery to which the colon is attached.

METACARPUS, that part of the hand between the wrist and the fingers.

METALS, in mineralogy, substances forming a distinct class from all other bodies, and characterized by their perfect opacity, peculiar splendor, density, and specific gravity. They are excellent conductors of heat and of electricity.

The metals constitute a numerous and important class of simple substances. Many of them have been known to mankind for ages, some are of more recent discovery, and the existence of several others has been demonstrated within the last twenty years. The metals at present known, are forty-two in number: Gold, Silver, Copper, Iron, Mercury, Tin, Lead, Zinc, Bismuth, Antimony, Arsenic, Cobalt, Platinum, Nickel, Manganese, Tungsten, Tellurium, Molybdenum, Uranium, Titanium, Chromium, Columbium, Palladium, Rhodium, Iridium, Osmium, Cerium, Potassium, Sodium, Lithium, Barium, Calcium, Strontium, Magnesium, Silicium, Alumium, Yttrium, Glucium, Zirconium; Thorinum, Selenium, and Cadmium.

Among the metals, some are *malleable*, others *brittle*. Malleability, or the capacity of being extended by the hammer, belongs to the following metals, in the order following: Gold, Silver, Copper, Tin, Cadmium, Platinum, Lead, Zinc, Iron, Nickel, Palladium. Potassium, Sodium, and frozen Mercury, are also malleable.

The malleable metals are also *ductile*, that is, they may be drawn out into wires.

They are arranged according to ductility as follows: Gold, Silver, Platinum, Iron, Copper, Zinc, Tin, Lead, Nickel, and Palladium.

The *tenacity* of the metals varies very considerably. The following are the weights capable of being sustained by wires, $\frac{787}{1000}$ths of a line in diameter.

	lbs. decimal avoird. parts.
A wire of Iron supports. .	549,250
Copper	302,278
Platinum	274,320
Silver.	187,137
Gold	150,753
Zinc	109,540
Tin	34,630
Lead.	27,621

The following metals are brittle: antimony, arsenic, bismuth, cerium, chrome, cobalt, columbium, manganese, molybdenum, tellurium, tungsten, titanium, and uranium.

None of the metals are very hard, and many so soft as to yield to the nail. They are all susceptible of fusion by heat, but the temperatures at which they liquify are extremely various. Mercury is fluid at all common temperatures, and requires to be cooled to 39° degrees below that of Fahrenheit's thermometer, before it congeals. Potassium melts at 150°, rodium at 200°, arsenic at 360°, tin at 450°, lead at 600°, zinc at 700°, and antimony at 800°. Silver, gold, and copper, require a bright cherry-red heat; iron, nickel, and cobalt, a white heat; manganese and palladium an intense white heat; molybdenum, uranium, tungsten, and chrome, are only imperfectly agglutinated at the highest temperatures of our furnaces; and titanium, cerium, osmium, iridium, rhodium, platinum and columbium, require the intense heat produced by an inflamed current of oxygen or hydrogen, or that of galvanic electricity.

At higher temperatures than those required for their fusion, many of the metals are volatile, and may be distilled in close vessels. Mercury, arsenic, potassium, tellurium, and zinc, are volatile at a dull red heat. Gold and silver are converted into vapour when exposed to the intense heat of the focus of a burning lens; and several of the metals boil and evaporate under similar circumstances.

When the metals are exposed at ordinary temperatures to the action of oxygen, or of common air, they are very differently affected. If the gas be perfectly dry, very few of them suffer any change unless heated in it; they then lose their metallic characters, and form a very important series of compounds, called *oxides*. A few of the metals, however, resist the action of heat and air so completely, that they may be kept in fusion in an open crucible for many hours, without undergoing any change. This is the case with gold and silver, and a few others, hence they have been called *perfect* metals; they may, however, be oxidized by the galvanic flame, or by passing a strong electric shock through them when drawn into a fine wire.

Each metal combines with a certain definite quantity of oxygen; and where the same metal unites with it in more than one proportion, in the second, third, and other compounds, it is a multiple of that of the first: thus 100 parts of mercury combine with four of oxygen to produce the *protoxide*, and with 8 to produce the *peroxide*. Copper also forms two oxides in the one, 12,5 of oxygen are united to 100 of metal, and in the other 25.

For further particulars, relative to the metals, see them under each head in the order of the alphabet. PLATINUM, GOLD, SILVER, &c.

METALLURGY, the act of working metallic substances from a state of ore and pyrite, to a state of perfect metallization. See metals, and the various articles relative to each separate metal throughout our work.

METAPHYSICS, in its most confined sense, the doctrine of mental phenomena and operations. It is not our intention to enlarge upon this subject, but merely to observe, that a great deal has been written about the mind to very little purpose. Too many philosophers have supposed, that the further they receded from common sense and the general apprehension of mankind, in their speculations upon this subject, the nearer they approached to truth, whereas we believe the contrary inference may be too often with justice deduced. For practical purposes, what we have to observe on this head, will be found under the articles IDEA, MIND, REASON, &c.

METATARSUS, that part of the foot between the tarsus and the toes.

METEORIC STONE, a stone, consisting of iron and nickel, which has fallen from the atmosphere to the earth at various times, and in different countries of the world, under circumstances so well authenticated as to leave no doubt of the fact. Nothing is, however, known of the source or origin of such bodies; it has been ascertained, upon the most satisfactory and indisputable evidence, that they are not of terrestrial formation. Some philosophers have supposed that they are projected from a volcano in the moon, and others, with perhaps more probability, suppose they are formed in the atmosphere by chemical combination and the agencies of magnetism, or the electric fluid. See IRON.

METEOROLOGY, the doctrine of the phenomena of the atmosphere, or, in more common language, the science of the weather, deduced from accurate and extensive observation.

This science is still in its infancy, although most certainly deserving the attention of mankind, and particularly of the agriculturist. The phenomena of the atmosphere may be arranged under five heads: the alterations which occur in the weight of the air, those which take place in its temperature, the changes produced by rain and evaporation, the excessive agitation to which it is frequently subject, and the phenomena arising from electric and other causes. See BAROMETER, WEATHER, WIND, &c.

Metheglin. See MEAD.

METHOD, regularity, order. Nothing is more advantageous in the acquisition of knowledge than method; so in regard to the convenience and dispatch of business, or affairs of any kind, method is absolutely necessary, if we mean to make the most of our time and our abilities. A habit of method should therefore be constantly pressed upon the attention of the young and inexperienced.

MEW, a species of gull.

MEZEREON, or *Daphne Mezereum*, one of the thirty species of the genus DAPHNE. The plants of this tribe are chiefly European, many Asiatic, some of which have lateral and terminal flowers. The following are those most deserving of notice:

The *Mezereum*, or Common mezereon, grows wild in England and the North of Europe; but for medical use, and as an ornamental shrub, it is cultivated in gardens. Its flowers, which are a palish lilac, and of an exquisite scent, expand in January or February, before the leaves. The berries are red. It is a hardy plant, seldom exceeding four feet in height, most commonly less than two. There are four varieties, one with white flowers and yellow berries. But their medicinal effects appear to be the same.

For medical use, the roots are dug up in Autumn, after the leaves have fallen. The inner bark of every part of this plant, when fresh, is very acrid, producing inflammation, vesication, and a discharge of serum when applied to the skin. The berries are equally acrid, acting, if eaten, as a corrosive poison. The bark retains its acrimony when dried. It yields its virtues to water and vinegar, operating as a stimulating diaphoretic, increasing the general arterial action, and determining powerfully to the surface; but it is apt to disorder the primæ viæ, and to produce vomiting and purging. It is occasionally employed as a stimulus to ill-conditioned ulcers. It has also been chewed with advantage in a difficulty of swallowing, occasioned by paralysis. As the virtue resides only in the bark, the root should be sliced longitudinally. It is used occasionally for chronic rheumatism, scrofulous swellings, and lepra; and has been supposed efficacious in the cure of syphilis. The dose in substance is from one grain to ten. The bark is an ingredient in the compound decoction of sarsaparilla. See SARSAPARILLA. When the discharge from issues cannot be obtained by common means, slices of the fresh bark of the root are steeped in vinegar for twenty-four hours, and a small portion of the bark laid on the issue for one night, the pea being previously removed.

It is said that an excellent red lake may be prepared from the ripe berries of this plant.

The *Thymelæa*, or Milk-wort leaved daphne, is a native of Spain, a deciduous shrub, about three feet high, the flowers, which appear in March, are of a greenish hue, and are succeeded by yellow berries.

The *Laureola*, Common spurge laurel, or Evergreen daphne, is found in our own woods, as well as in those of Germany and Switzerland. The flowers appear in January and continue till April, accompanied with a pleasant perfume.

The *Cnidium*, Guidium, or Flax-leaved daphne, is a native of Italy and Spain. The *alpina*, or Alpine daphne, is a native of Italy and the Alps. The *odora*, or Odorous daphne, exceeding all the rest of the tribe for the exquisite perfume of its flower, is a native of China and Japan. It must be cultivated in this country as a green-house plant.

The mezereon and its varieties, are best propagated by sowing the seeds or berries as soon as they become perfectly ripe. *In* these beds the young plants may remain till the second autumn, when they should be transplanted either in nursery rows, or where they are to remain. Most of the other species may be increased both by seeds, layers of the young shoots, and by cuttings. The last sort can only be propagated by seeds obtained from its native country; they must be sown in a hot bed in the spring, and afterwards placed in a green-house.

MIASM, or **MIASMA**, a matter, arising from putrifying vegetables and other substances, supposed to produce various diseases.

MICA, a genus of argillaceous earths, consisting principally of alumina and silica, with a little magnesia and oxide of iron. Its texture is lamellar, and it is easily split into thin, flexible, elastic, transparent plates. It is so soft as readily to yield to the nail; it is sometimes met with crystallized, in four and six-sided prisms. Its usual colours are shades of brown and grey; sometimes it is red, and sometimes black. In some parts of Siberia, mica is copiously quarried, and is employed as a substitute for glass in windows and lanterns. The extreme tenacity of the plates into which it may be divided, and their elasticity, renders it very useful for the enclosure of objects to be submitted to microscopic inspection. It is fusible before the blow pipe, into a whitish, or coloured enamel. Nine species have been described; as follow: the *membranacea*, Glimmer, Glist, or Muscovy talc; transparent, with large parallel elastic, easily separable plates; found in Malabar, Siberia, Russia, Finland, France, and near Geneva; often substituted for glass. The *laminosa*, Fissile, or semi-pellucid mica, found in the granites of primeval mountains, generally smoke-colour or black. The *squamosa*, or scaly mica, found every where in granite and other stones, intermixed among their component parts in almost innumerable hues and colours. The *undulata*, or Wavy mica, found in the mines of Dalecarlia. The *hemisphærica*, or Hemisphæric mica, is found in Finland. The *striata*, or Striated mica, is found in Saxony. The *crystallina*, or Crystal mica, in six sided tables, is found in the mines of Dalecarlia, in Salsburg, and Zinnwalden The *prismatica*, or Prismatic mica, is brown, with nine-sided prisms, found in the mines of Saxony. The *lepidolithus*, or Lepidolite, or Lilalite, with scattered, flat, cohering, pale, violet scales.

MICHAELMAS, or FEAST OF ST. MICHAEL, one of the quarter days of the year, being the 29th of September.

MICHAELMAS DAISY, STAR-WORT, or *Aster*, a genus of plants, embracing more than one hundred species, scattered over the globe. They may be sub-divided into more or less shrubby; herbaceous; stem, one or two flowered; leaves linear or lanceolate, entire; leaves heart-shaped and ovate, serrate; leaves ovate, entire; leaves lanceolate, the lower more or less serrate; leaves pinnate. Of these the only native species of our own country is the *trifolium*, found occasionally on our muddy shores.

Many of the roots of these species are perennial, with annual stalks. They are best propagated by parting the roots at almost any period between September and March.

MICROMETER, an instrument, by the help of which the apparent magnitude of objects viewed through telescopes or microscopes, are measured with great exactness. The general principle of this instrument is, that it moves a fine wire parallel to itself in the plane of the picture of an object formed in the telescope, and thus measures its perpendicular distance from a wire fixed in the same plane.

MICROSCOPE, an optical instrument, composed of lenses or mirrors, by means of which small objects are made to appear larger than they do to the naked eye. Microscopes are distinguished into simple and compound, or single and double. Simple, or single microscopes, are such as consist of a single lens, or a single spherule; and a compound microscope consists of several lenses duly combined; other varieties of this instrument have been contrived: hence reflecting microscopes, water microscopes, &c.

Midriff. See DIAPHRAGM.

MIDSUMMER, one of the quarter days of the year, being the 24th of June.

MIDWIFERY, the obstetric art. The practice of this art is, we think, in this country, too much restricted to male practitioners: indeed, decorum would always consign it to the hands of females, and wisdom never to those of males, unless under extraordinary circumstances of difficulty and danger. We do not know why females could not suitably educated to practise this art generally, with as much success as the other sex: we fear, however, that fashion, the nervous irritability, and fears of the ladies themselves, operate more powerfully than reason in this affair. The practical observations which we have to make upon this subject, will be more appropriate under PARTURITION, to which, as well as to ABORTION, INFANCY, MENSTRUATION, and PREGNANCY, we refer.

MIGNONETTE, or *Reseda odorata*, an annual plant, a native of Barbary, well known in our flower gardens, and blossoming at various seasons of the year, depending upon the time at which it is sown, the place where the plant is kept, &c. When sown late in the summer, it will continue to blossom through the winter if kept within doors, or in a green-house; and if sown early, provided the blossoms be constantly cropped, so that it does not perfect its seed, the plant will become a sort of biennial, and continue to blossom through the winter, or even longer. It is one of the most agreeable garden flowers, and is always reared from seed without either trouble or difficulty. See WELD.

Another species, called *tree mignonette*, also an annual plant, with a taller and more woody stalk, is occasionally found in our gardens, and forms a pleasant variety, but its smell is inferior to the last. It is most easily propagated; generally, after once in the garden, without either care or culture.

MIGRATION OF BIRDS. It now appears generally admitted, that many different kinds of birds annually pass from one country to another, and spend the summer or the winter where it is most agreeable to them; and that even the birds of our own island will seek the most distant southern regions of Africa, when directed by peculiar instinct to leave their own country. It has long been an opinion also pretty generally received, that swallows reside during the winter season in the warm southern regions. The causes for such migrations of the feathered tribe, appear to be a defect of food at certain seasons of the year, the want of a secure asylum during incubation, and nutrition, and cold.

Of the tribe of *Crows*, the hooded crow migrates regularly with the woodcock. It inhabits North Britain the whole year; a few are said to breed annually in Dartmoor in Devonshire. It breeds also in Sweden and Austria.

The *Cuckoo* disappears early in Autumn, but continues long after it ceases its cry, which is about the end of June. Its retreat, as well as that of the *Wry-neck*, is unknown.

. The *Hoopoe* comes to England, but by accident. It breeds in Germany. The whole tribe of *Grouse*, except the *Quail*, lives here all the year round: that bird either leaves us, or retires to the sea coasts.

Of *Pigeons*, some few of the ring doves breed here, but the greatest part quit the country in the spring, most probably for Sweden. The *Turtle* also most probably leaves us, or at least changes its place, removing to the southern counties.

The *Stare* breeds here; but from their numbers in winter, it is probable that many migrate to Sweden in the spring. Of *Thrushes*, the *Fieldfare*, and the *Redwing*, pass their summer in Norway. These two, and the *Royston* crow, are the only birds which regularly and constantly migrate into England, and do not breed here. The hawfinch and crossbill come here at uncertain times.

The *Chatterer*, appears annually about Edinburgh in flocks during winter. In South Britain it is an accidental visitant. *Grosbeaks* and *Crossbills* come here but seldom; they breed in Austria. The Pine Grosbeak breeds probably in the Highlands of Scotland.

All the genus of *Buntings* inhabit England throughout the year, except the *Greater brambling*, which is forced here from the north in severe seasons.

All the *Finches*, except the *Siskin*, continue in some parts of the kingdom. Linnets shift their quarters, breeding in one part of the island and removing with their young to another. The Siskin, an irregular visitant, is said to come from Russia

Of the *Larks*, *Flycatchers*, *Wagtails*, and *Warblers*, only part of them quit these kingdoms, though the seasons of migration is the same in all. The nightingale, black-cap, fly-catcher, willow-wren, wheat-ear, and white-throat, leave us before winter, while the small and delicate golden-crested wren, braves our severest frosts. The migrants of this genus continue longest in the southern countries. Spain, or the South of France, is probably their winter asylum.

Of *Swallows* and *Goat suckers*, every species disappear at the approach of winter.

Of the vast variety of *water fowl* which frequents Great Britain, few are known to breed here. The cause is most probably from their timidity, and a desire of secure retreat. Many birds which now migrate, remained in this country formerly throughout the year: the increase of population is, we presume, the cause of this difference. But those which build in inaccessible rocks are still found with us in vast numbers.

Of *Herons*, the common kind and the bittern never leave us; the white heron is uncommon, and its visits uncertain. The curlew breeds sometimes on our mountains; it is probable, however, that the greater part retire in summer to other countries; the *whimbrel* breeds on the Grampian hills.

The *Woodcock* breeds in the moist woods of Sweden and other cold countries. *Snipes* breed here, but the greatest part retires elsewhere, as do every other species of this genus.

Of the *Sandpipers*, the lapwing continues here the whole year; the *ruff* breeds here, but retires in winter; the *red shank* and sandpiper breed in this country, and reside here. The rest are absent during summer.

The *Long-legged Plover* and *Sanderling*, visit us only in the winter; the *dotterel* in spring and autumn; yet it does not appear to breed in South Britain. The *Norfolk plover* and *Sea lark* breed in England. The *Green plover*, breeds on the mountains of the North of England, on the Grampian hills. Every species of the genus of curlews, woodcocks, sandpipers, and plovers, which forsake us in the spring, retire to Sweden, Poland, Prussia, Norway and Lapland to breed; as soon as the young can fly they return to us again.

Every species of the *Rail* and *Gallinule*, continue with us the whole year; the land-rail excepted, which is not seen in winter; it retires most probably to Spain.

Phalaropes visit us but seldom; they breed in Lapland and the Arctic regions. The crested *grebe*, the black and white grebe, and the little grebe, breed with us, and never migrate; the others occasionally visit us, and breed in Lapland.

The *Avocets* breed near Foss-dike in Lincolnshire, but quit their quarters in winter, at which time they are shot in different parts of the kingdom, which they visit not regularly, but accidentally.

The Great *Auk*, or Penguin, sometimes breeds in St. Kilda. The auk, guillemot, and puffin, inhabit most of the maritime cliffs of Great Britain, in amazing numbers, during summer. The black guillemot breeds in the Bass, Isle St. Kilda, and in Llandidno rocks. The winter residence of the lesser guillemot, and black-billed auk, is the Frith of Forth, but of the rest is not well known.

The *Divers* breed chiefly in the lakes of Sweden and Lapland, and in some countries near the pole; some possibly breed in the north of Scotland and its isles.

The *Terns* breed here, but leave us in winter. Of the *Petrels*, the *fulmar* breeds in St. Kilda, and continues there the whole year, except September and a part of October. The *shearwater* visits the Isle of Man in April, breeds there, and leaving it in August or beginning of September, disperses over all parts of the Atlantic Ocean. The ***storm-finch*** is seen at all distances from land, on the same vast watery track; nor is it ever found near the shore, except by accident or in the breeding season: it breeds on St. Kilda.

The ***Mergansers*** fill the Lapland lakes during summer. A few, possibly, breed in the North of Scotland.

Of the numerous species of ***Ducks***, few breed here: the swan and goose, the shield duck, or burrough duck, the eider duck, a few shoveleens, garganies, and teals, and a very small portion of the wild ducks. The rest contribute to form that amazing multitude of water fowl that annually repair from most parts of Europe, to the woods and lakes of Lapland and other Arctic regions, there to perform the functions of incubation and nutrition in full security. They and their young quit their retreat in September, and disperse themselves over Europe. With us they appear the beginning of October, circulate first round our shores, and, when compelled by severe frost, betake themselves to our lakes and rivers.

The *Cormorant* and *shag* breed on most of our high rocks; the *gannet* in some of the Scotch isles and on the coast of Kerry: the two first continue on our shores the whole year; the gannet is found all round the seas of Great Britain, and even as far as the Tagus.

Of the numerous species of fowl here enumerated, it may be observed, how few entrust themselves to us in the breeding season, and what a distant flight they make to perform the first great dictate of nature. There seems to be scarcely any but what we have traced to Lapland, a country of lakes, rivers, swamps, and Alps, covered with thick and gloomy forests, which afford shelter during summer to these fowls, which in winter disperse over the greatest part of Europe. In those Arctic regions, by reason of the thickness of the woods, the ground remains moist and penetrable to the woodcocks and other slender-billed fowl; and for the web-footed birds, the waters afford larvas innumerable of the tormenting gnat. The days there are long; and the beautiful meteorous nights, indulge them with every opportunity of collecting so minute a food, whilst mankind is very sparingly scattered over that vast northern waste.

Mildew. See MOULD.

MILE, a term applied to the distance of eight furlongs. The English statute mile is 80 chains, 1760 yards, or 5280 feet. The following table contains the length of the mile in use among the principal nations in Europe, in geometrical paces, 60,000 of which make a degree of the equator.

	Geometrical paces.
Mile of Russia	750
Italy	1000
England	1200
Scotland and Ireland	1500
Germany	4000
Poland	3000
Sweden	5000
Denmark	5000
Hungary	6000
Spain	3428
Old league of France	1500
The small league ibid	2000
The mean league ibid.	2500
The great league ibid.	3000

Milfoil. See YARROW.

MILIARY FEVER, or *Miliaria*, a fever accompanied with eruptions, resembling millet-seed. It is distinguished at its commencement by considerable coldness and rigor, succeeded by great heat, much anxiety, and frequent sighing, followed by profuse perspiration, of a strong and peculiar smell, preceded by a sense of pricking, as of pins' points in the skin. The eruption appears sooner or later, in different persons, but at no determinate period; first on the neck and breast, in small red pimples, which, in two days, become white vesicles, desquamate, and are succeeded by fresh pimples. It affects both sexes, and persons of all ages and constitutions; but females of a delicate habit are most liable to it, particularly in childbed. Very violent symptoms, such as coma, delirium, and convulsions, attend occasionally this fever, in which case, it sometimes proves fatal. A numerous eruption indicates more danger than a scanty one; it being steady, is also a more favourable symptom, than its frequently disappearing and coming out again; and it is more favourable when the places covered with the eruption appear swelled and stretched, than when they remain flaccid.

As this disease is generally accompanied with danger, the best medical advice should at once be had.

It may, however, be useful to observe, that, besides the eruption itself, a peculiar symptom in this complaint is the sweating which always precedes and accompanies it. It is not, however, contagious, but is nevertheless one concerning which, as to its nature, very different opinions have been formed. From its arising very often in persons who have been previously weakened by large evacuations, particularly of blood, there is good ground for concluding that it is one of those numerous diseases of debility which require stimulants for their cure. Indeed, some writers have treated the slow, nervous, and miliary fever under one head, considering the eruption itself as always a symptomatic and accidental affection. The mode of treatment, when a physician is not employed, may therefore with propriety be the same as that which we have described under TYPHUS MITIOR, or *nervous fever*, which see.

MILK, a fluid secreted by peculiar glands in the female of various animals, and designed to nourish their young in the early part of life. It is of an opaque white colour, a mild saccharine taste, and a slightly aromatic smell. It is separated immediately from the breasts or udders of the female of man, quadrupeds, and cetaceous animals. It differs greatly in quality in the different animals, and under different circumstances.

The milk of the female of the human subject who suckles, living upon *vegeto-animal food*, never acesces, nor coagulates spontaneously, although exposed for many weeks to the heat of a furnace; but it evaporates gradually in an open vessel, and the last drop continues sweet and bland; but if mixed or boiled with vinegar, juice of lemons, cream of tartar, or taken into the human stomach, it does acesce. It is coagulated with the acid of salt, or of nitre, and by the acid gastric juice of the infant. The milk of a suckling woman who lives upon *vegetable food* only, like cow's milk, easily, and of its own accord, acesces, and is acted upon by all coagulating substances, like the milk of other animals.

The milk varies also, at different periods of the day in the same female; and it is said that the best time for giving suck, is about the fourth or fifth hour after meals; but we cannot avoid thinking, that this is a refinement on the maternal process of suckling to which neither a mother, nor common sense, will ever conform.

The milk secreted immediately after delivery is of a thin serous nature, and purges the bowels of the infant, which it appears wisely designed it should do; and hence the folly of those persons who omit to place the child to the breast for many hours after it is born. It soon, however, becomes thicker and more nutricious, and the longer the nurse suckles, the thicker the milk is secreted. See INFANCY.

Cow's milk, varies in specific gravity, from 1018, to 1020. It boils at a temperature a little above that at which water boils, and freezes at 32°. When allowed to remain a few hours at rest, a thick unctuous liquid collects upon its surface, called *cream*; the colour of the remaining milk becomes blueish-white, and when heated to about 100°, with a little *rennet*, it readily separates into a *coagulum* or curd, and a *serum* or whey. In this way the three principal constituents of milk are separable from each other.

With cream is made *butter*. See BUTTER.

The *curd* of milk has the leading properties of coagulated albumen, and, like that principle, is coagulable by alcohol and acids, and is also similarly affected by galvanic electricity: heat slowly produces the same effect; and by boiling milk, the albumen separates in successive films. Curd in combination with various proportions of butter constitutes the varieties of cheese. See CHEESE.

Whey, is a transparent thin fluid, of a pale yellow colour, and a sweetish flavour; by evaporation, it affords a minute quantity of saline matter, and a considerable portion of sugar of milk. This last may be obtained in white *rhomboidal crystals, of a sweet taste*, and soluble in seven parts of water at 60°, but insoluble in alcohol. When exposed to heat it affords nearly the same products as common sugar. When it is heated with nitric acid, it affords a peculiar acid, which is analogous to the acid obtained from gum. It is not crystallizable, and is sparingly soluble in water, requiring 60 parts at 212°. It is called the *Saccholactic acid*. It combines with the metallic oxides, and forms a class of salts called *saccholates*.

When milk or whey are exposed to a temperature between 60 and 80, they undergo a spontaneous change, attended by a production of an acid which has been termed *lactic acid*. This acid, if it be not the acetic acid originally, it is said to become so by combination with a base, and subsequent separation by sulphuric acid.

In some cases, whey may be made to undergo the vinous fermentation; and the Tartars, it is said, prepare a kind of wine from the whey of mare's milk, which they call *koumiss*.

Goat's milk, is very thick, yellowish, and pleasantly flavoured; it will keep a long time without growing sour, or sensibly changing. It yields by agitation, a very solid and white butter. It also abounds in curd, but it possesses a small quantity of sugar.

Sheep's milk, resembles cow's very closely in taste and appearance; it yields abundance of butter, but it always remains soft; the quantity of curd is large; which has a very fat and unctuous appearance, and a peculiar taste.

Mare's milk, is thin and insipid, and does not coagulate with vinegar; it is remarkable for the small quantity of cream which it gives, and the extreme difficulty of separating the butter from it by agitation.

All these species of milk resemble each other essentially in the number, and general chemical nature of the ingredients; but there is a great diversity in their respective proportions. Thus cow's and sheep's milk yield cream easily by repose, the consistence of which is greater than in the others, and the butter of which separates more perfectly. There is an equal difference in the consistence of the curd; that from cows and sheep being dense, and readily separating from the usual coagulating substances; while the curd from asses' and mare's milk always remains thin and of nearly a creamy consistence.

Of milk as an article of food for young children, it is impossible to speak too highly, because it is that food which nature herself has immediately provided. In general, however, the milk of the human breast is not needed for healthy children, more than for the first six or eight months of their existence; the last period may even be more than sufficient, provided the child is in good health, and has two teeth in each jaw: and it appears to us that when both these indications are present, no child should be suckled longer: indeed, from pretty extensive observation, we are persuaded that by longer suckling, disease either of the child or of the mother is very often induced, and therefore long suckling should be most carefully avoided: the milk is neither suitable for the stomach of the child, nor is the mother herself in a suitable state to secrete it. After weaning, good cow's milk is a very proper succedaneum when mixed with bread, for the milk of the mother,

Of milk as food for adults we cannot speak so highly. There are persons to be found who live almost entirely on cow's milk, but we think that its separated constitutentents, viz. butter and cheese eaten with bread, and whey, when sweet, drunk occasionally for the quenching of thirst, are much more wholesome articles of diet for persons in health. In some diseases, and under peculiar circumstances, a milk diet has unquestionably been advantageous; *sour* milk should by all means be avoided.

The milk sold in the metropolis is generally so bad, that it is to be regretted any person can be found to purchase it. Various accounts have been published as to the mode in which it is adulterated, it is said that even poisonous ingredients are occasionally mixed with it. We believe, however, that the chief, perhaps only adulteration, is water.

Milk-fever. See BREASTS, INFLAMMATION of.

Milk-house. See DAIRY-HOUSE, BUTTER, and CHEESE.

Milk-thistle. See THISTLE.

MILK-VETCH, GOAT'S THORN, LIQUORICE-VETCH, or *Astragalus*, a genus of leguminous plants comprising one hundred and seventy-three species, which may be subdivided into those with leafy stems, erect; flowers axillary; spikes cylindric axillary, sessile, or nearly so; stems leafy, erect spikes and racemes peduncled; stems leafy diffuse, leaflets placed in whorls; scape naked, with a leafy stem, and shrubs or undershoots with the petioles permanent and becoming spinous. Three only of the species, the *glycyphyllus*, common sweet milk vetch, wild liquorice or liquorice cock's-head, found in our woods; the *hypoglottis*, on our heath; and the *uralensis*, on the mountains of Scotland. The common milk-vetch and the last have been recommended as winter fodder for cattle.

The root of the *excapus*, or stemless milk-vetch is said to cure confirmed syphilis, especially when in the form of nodes, accompanied with nocturnal pains.

The *Tragacantha*, is the plant which affords the gum tragacanth of the shops. See GUM.

Milk-Weed. See PARSLEY, WILD.

MILK-WORT, or *Polygala*, a genus of plants, consisting of seventy-six species, scattered over the globe, which may be thus subdivided: flowers with a crest, or pencil-like appendage; flowers not crested, shrubby; beardless herbaceous, with the stem quite simple; bearded herbaceous, with the stem branched. The following are the most entitled to notice:

The *Vulgaris*, or Common milk-wort, found in our pastures; the root is similar in taste to the *senega*, mentioned below, but much weaker, the leaves are *very bitter; a handful infused in wine,* is said to be a gentle purge.

The *Amara*, or Bitter milk-wort, is indigenous to the south of Europe, with larger leaves than the preceding. It has been used in pulmonary consumptions; its virtues are balsamic, demulcent, and corroborant.

The *Senega*, or RATTLE SNAKE ROOT. See RATTLE SNAKE ROOT.

The *Myrtifolia*, or Myrtle leaved milk-wort, with a shrubby stem, four or five feet high, having large crested flowers white without, purple within; a native of the Cape of Good Hope; and the *chamœbuxus*, or Box-leaved milk-wort, with a slender, branchy, woody, stalk, about a foot high; the leaves are oblong, lanceolate, acute; the flowers, white without, purplish, intermixed with yellow, within; a native of Austria, are cultivated in our gardens. The first is best propagated by seeds; and the last by dividing its creeping roots.

MILL, a machine used for grinding corn, and various other purposes. It is distinguished by different names, according to its nature or its uses. Thus we have a wind-mill, a water-mill, a horse-mill, a hand-mill, a grist-mill, an apple-mill, an oil mill, a coffee-mill, a malt-mill, &c. &c.

The constructions of mills are so various, that it is impossible we can even enumerate those which have been invented for the grinding of corn alone. A complete family mill, for the grinding of corn, is still, we fear, to be considered as a desideratum. One of the simplest which we can recommend is that presented to the Society of Arts by Sir John Sinclair, and is described in the XXXVth vol. of their Transactions, and denominated 'a PORTABLE MILL. This mill was used in the French armies during the Russian campaign.

The whole apparatus is contained in a box only fourteen inches square, and eight inches high. In order to use it, it is to be fastened to a strong table, a cross bar, a tree, or any other proper support which may happen to be at hand. By means of four iron pins, a *screw bolt, and, if necessary, a wooden* block, a winch is to be screwed on to the axle; a sack is to be hung below the mill, by means of three buttons which pass through holes made in the frame, and the hole at the extremity of the flat bar; the hopper is fixed in a slit which communicates with the feeder.

The grain being put into the hopper, the mill is brought into action by turning the winch, which is attached to the common axle of the machine, from which all the other parts receive their motion. The farthest extremity of the axle is square, and fits into a corresponding hole, occupying the centre of the toothed wheel, which turns another wheel, on the axis of which is fixed the feeder, consisting of an iron wheel, between two and three inches in diameter, the circumference of which has four notches or cells, for the purpose of receiving the corn, and conveying it in due proportion to the grinding plates. The wheel first mentioned has 20 cogs, and the next has 25; therefore five revolutions of the common axle occasion four revolutions of the latter wheel, and of course convey the amount of 16 cells full of corn to the grinding plates. There is a small brush attached to the feeder, which prevents it from becoming choaked. There is an iron bracket to which the grinding plate is attached. There is also a round collar in the centre, through which the common axle passes; and there is also a tube by which it is supplied with oil, which is poured in at a small hole. There are several screws which fix the grinding plate to the bracket, and at the same time adjust the former, so as to make it truly vertical. There is also a lip, to prevent the grain, while passing to the grinding plates, from being forced behind them. The fixed grinding plate is scored or channelled nearly in the same manner as common grinding stones. There is also a passage by which the grain passes from the feeder to the grinding plates.

Two horizontal pillars pass through the back of the wooden case in which the mill is contained, and are kept firm in their places by two screw nuts; they also pass through two other hexagonal screw nuts, and thus keep the fixed grinding plate and its bracket firm in their places. In the front of the mill is a strong cross bar, which supports one end of the common axle in a collar, and secures the ends of the horizontal pillars by two screw nuts.

The running grinding plate is fixed on the common axle by means of two nuts. Both grinding plates are channelled on their surface, and being somewhat concave, the grain becomes continually more and more comminuted as it passes from the centre to the circumference of the plates, whence it falls through a slit into the sack suspended beneath.

The distance between the two grinding plates is determined by a regulator. It consists of a collar which slides backwards and forwards on the common axle; but it is prevented, by two projecting ribs, working in two grooves, from having any concentric motion. Part of the surface of the collar, adjacent to a screw nut, is indented like a racket wheel, in order to receive the click. Hence the mode of its section is obvious. In proportion as the nut is screwed, so as to make the collar press against the cross-bar, the running plate is brought nearer to, and at length into actual contact with the fixed one, while the contrary takes place by screwing the regulator in the opposite direction.

There is also a key for detaching the parts of the machine, and putting them together again.

Mill-mountain. See FLAX.

MILL-REEK, a disease caused by the fumes of lead. See LEAD.

Mill-stone. See SAND-STONE.

Mill pedes. See WOOD-LOUSE.

MILLEPORE, or *Millepora*, in zoology, a genus of the class worms. The animal a hydra, or polype; coral mostly branched, and covered with cylindrical turbinate pores. Thirty-four species, chiefly inhabitants of the Mediterranean, several found on our own coasts, especially Cornwall, and a few scattered through the seas of America, India, and Polynesia. The mode of propagation and support is similar to that of *madrepores*. The following are the chief: the *mineacea* is very minute, branching into small lobes, and covered with very small pores; a beautiful little coral, and the smallest of its genus, being seldom above a quarter of an inch high. The *cervicornis* is from five to six inches high: inhabits the Mediterranean and Cornish coasts. The *cellulosa*, inhabits the Mediterranean and European seas, and resembles a piece of lace. The *polymorpha*, inhabits most European seas, and is the common coral of the shops formed into toys for children. The *violacea* is flat and branching; inhabits the South Sea islands; about three inches high; a fine violet blue colour. See CORAL.

Miller's thumb. See BULL-HEAD.

MILLET, or *Panicum miliaceum*, a species of panic grass, a native of India, the seeds of which are well known in domestic economy. See PANIC GRASS.

MILT, in anatomy, a popular name for the spleen. See SPLEEN.

MILT, or MELT, in natural history, the soft roe in fishes; so called from its yielding, by expression, a whitish juice resembling milk. See ROE. The milt is properly the semen, or spermatic part of the male fish.

Milt-waste. See SPLEEN-WORT.

Mimosa. See SENSITIVE PLANT.

MIND, in its most extensive signification, implies not only the intellectual powers of man so called, consisting of that assemblage of impressions and processes, distinguished by various names, such as sensations, perceptions, ideas, memory, judgment, imagination, &c. &c. but also of some *recipient*, which receives such impressions, and performs the various processes which have been very commonly denominated the mind. The seat of this recipient is manifestly in the brain.

In treating this subject, we think it necessary to pause here, and examine a little into the nature of this recipient. We may observe then that it appears to us, mankind generally have been deceived, as to the actual nature of the mind, by assuming many effects as causes. We may illustrate this by the common and familiar motions of the human arm and hand. If we examine *that wonderful limb, we shall find that* all its complex and various motions depend upon very simple means: the structure of the shoulder joint, that of the elbow, of the wrist, and of the fingers. Now, as the various motions of this limb and their effects, cannot be said to be the joints themselves, nor the limb itself, so neither are, in truth, the memory, judgment, &c. the mind itself, but the effect of impressions made on this wonderful and surprising power, or recipient, resident, doubtless, in the brain; but whether distinct from it, as most believe, or only originating in its peculiar structure, as some have contended, is a question into which we shall not enter; it is sufficient for our present purpose, that we know such a recipient exists.

The dispositions, to avoid pain and to receive pleasure, are inherent in the mind, the recipient, from its earliest stage; to the operation or effect of these dispositions are given the various names of fear, grief, joy, love, &c.: many of them are distinguished by the names of passions. They are not directly under our controul, but indirectly they frequently become so; they may be so modified by circumstances, habit, education, &c. that some pains and pleasures become obliterated, whilst others are *generated* by the habits, usuages, and customs of the society in which we live. Some of these dispositions are much more capable of control than others; those which are least so are hunger and thirst, essential to the existence of the individual; and that for the continuance of the species usually denominated love.

'Such too is the sympathetic nature of the mind, the recipient, that when any derangement takes place in our bodily organs, that immediately partakes of it, and suffers more or less accordingly; and so, on the contrary, if the body communicates pleasurable emotions to the mind, the sympathy is equally felt; the mind likewise communicates its sympathies to the bodily functions; if they are pleasurable, and not in excess, they contribute to the health of both, if they are painful, to a certain degree *to disease: excessive pleasure* as well as pain, produces, not only disease, but sometimes immediate death; such indeed is the intimate union of the mind and body during our whole existence, that they continually and mutually act, and re-act, upon each other. For want of a proper sense of the importance of this truth, and from an inattention to those laws by which they are mutually governed, our knowledge of the method of curing disease, and especially mental disease, still continues in a very imperfect state.

We may now pursue our simile between the arm and the mind a step farther. It is well known that if we wish to become dexterous in any art requiring considerable employment of the hand, the art of writing for instance, that we must use it often, and for a long time, before we can obtain the ease and dexterity of a master; nay, that, without long and constant use, such dexterity cannot be acquired. The mind, the recipient of our ideas, the organ or instrument in which our thoughts arise, is of a similar nature to the human hand, it must be used before it becomes dexterous; slight and casual impressions produce occasional motions, often irregular and by no means to the purpose; to be efficient, they must be long-continued, regular, and uniform. We know also that if, in the performance of any manual operation, such as weaving, sewing, &c. &c. any motion not necessary to the proper performance of the process be introduced, and continued for a long time, the difficulty of getting rid of such bad habit is often great, not to say, sometimes impossible. Hence the necessity of learning the proper motions in the first instance. A similar mode of reasoning applies to the human mind: in order that its motions or operations should be useful, regular, and appropriate, its exercise is necessary, and that exercise should be not only early, but long continued, and of such a kind, that no bad habits may be introduced: for once introduced, their eradication is always more or less difficult, and sometimes impossible.

But it is, however, found that, to continue our simile of the arm and hand, some persons will more readily acquire dexterity in one manual art than another, and sometimes *different means* must be used with different persons, in order that such dexterity may be acquired. So in the human mind, there is often a predisposition, which we have elswhere in our work denominated *natural capacity*, for the performance of certain motions or actions. Of course, where such predisposition exists, the attention and care of inculcating such motions are considerably abridged; but in the mind, less apt, more attention and care will be necessary to produce them: but they may be produced notwithstanding. Hence of such powerful and paramount importance is the early exercise of the mind, in any given way, and for a long continuance, that although a consideration of predisposition in the outset of life is necessary, and should be carefully attended to, yet this predisposition very often becomes ultimately so much modified by education, as not to be the primary but the secondary power of the mind.

We here speak of the predisposition for actions, which we suppose ought to be performed, in other words, *good* actions; but there is sometimes another predisposition for motions or actions, which ought not to be performed, viz. *bad actions*. This consideration has been a stumbling block to myriads, and is the constant theme with those who determine to see objects only through a certain medium. To us, however, it presents no difficulty whatever. In considering this predisposition we must remember, that we are not often called upon to contemplate it until it has acquired, through bad habit or education, a force which it did not originally possess, and that an early attention to such predisposition, and an introduction of counter motions, if we may so speak, into the mind, will counteract or obliterate it. Indeed, in the study of such predisposition, and in the introduction of such counter motions, does the business of education, so far as concerns the moralist, greatly consist.

The mind operates by invariable laws. Our mental operations are prompted either by sensations of uneasiness, arising within ourselves, as hunger, thirst, &c. or by those objects by which we are surrounded, as heat, light, cold, human society, &c. &c. Such promptings exercise over us a control more or less powerful, depending upon their intensity, their duration, and the mode in which they are applied. In the new-born child, the sensation of hunger, or pain, prompts it to express its uneasiness by crying; and excessive light will cause it to close its eyes. After a short time, the image of his mother becomes impressed upon his mind, and the pleasure which the bland aliment milk affords him, with her soothing endearments, excite the first rudiments of reflective ideas; by degrees the operations of his mind, at first simple, increase; he loves, he dislikes, and according as he is disciplined, will they ultimately become the reflective images of those circumstances by which he has been, from his birth, continually surrounded. Hence arise his hopes and his fears, his views of justice and his sense of wrong. This is a fact which, we presume, must be universally admitted: and upon its universality rests its value and its truth.

We see, therefore, that the human mind, or recipient, the organ of thought and emotion, or passion, resides in the brain; that sensation, reflection, imagination, judgment, the passions, &c. &c. into which it has been commonly divided, are nothing more than the effects of impressions made upon it, either by the external objects by which we are surrounded, by some internal sensation conveyed to it by the medium of the nerves, or by a reflective process in the mind itself.

We will now apply this view of the mind to the purposes of education, the only purpose for which, indeed, we write this article. Man, we should never for a moment forget, is by far the most imi tative of all animals, and he is so, in consequence of the superior capacity and powers of his mind. It has been said, that the whole creation is a miracle, but in contemplating the human mind, the simplicity of its original nature, and its capacity for the reception and combination of ideas, miraculous as creation is, we do not hesitate to affirm, that the human mind is the most miraculous of all things with which we are acquainted. Who, for example, did he not know the fact, would believe, that from about thirty simple sounds, or less, the whole fabric of human speech is erected, and that most of the alphabets of the different languages of the world are comprised in less than that number of signs?

It may not be inappropriate here to observe, relative to the formation or education of the human mind, the human character, that it for ever shrinks from all attempts to *force* it into a mode of discipline or action; that, while it may be led by gentleness almost any where, the least appearance of force or violence produces revolt and repugnance. This, in the ignorant and uninformed, has been frequently called obstinacy; but it is, nevertheless, the effect of a general law which we all obey: and there is no other way of removing such obstinacy, but by enlightening the understanding —imparting knowledge. To expect any one to become rational and virtuous, unless the proper means be taken to make him so, is truly absurd. We know, however, that children receive impressions with the greatest readiness, and hence it is, that too early an attention cannot be paid to the method in which they are brought up. Surround them with proper circumstances, impress them with just ideas, and we need not doubt, we shall not fail, of the desired result.

The previous steps in the education of children are to take into consideration their natural capacities, or predispositions; in one the *memory* may be already so powerful, as to require no further particular exercise or attention, whilst in another it may be so weak, that scarcely any reflective process can be carried on. In another, the *imagination* may be so lively as to usurp the place of the judgment, and hurry the possessor in more mature years, into errors of the most fatal kind. In another, the consideration of *self* may be so predominant, as to absorb every sentiment of general benevolence, and, in manhood, may ripen into cruelty and general misanthropy. In another, the *desire* of distinction, may grow into such exuberance, as, in given circumstances, to produce the desolater and the tyrant of the human race. That such predispositions should be counteracted most early admits of no question; how they are to be counteracted, and what are the dispositions best calculated to form the virtuous character, are questions by no means of such easy solution. That they may be counteracted, and better motives supplied for human conduct, we cannot permit ourselves to doubt. But it must not be forgotten, that the most powerful of all means, for the formation of the human mind, are those circumstances with which the child is immediately surrounded, which attend him when awake, which hover over him when asleep, and which even prompt his dreams. The looks, gestures, and conversation of his mother, the more grave conversation and behaviour of the father, the opinions and conduct of the child's associates, and the general habits of the society in which he moves, all make up that concourse of causes which form the character of almost every individual which ever did, or ever will, exist.

This view of the nature of the human mind, and of education, is most powerfully consolatory. As no effect can take place without a cause, so we know that, as the human mind cannot become vicious without a cause, so will it become virtuous by the introduction of causes calculated to obtain so desirable an end; and to expect children to become virtuous without the introduction of the causes which alone can make them so, is of all things the most preposterous.

To those therefore to whom the care of the rising generation is immediately intrusted, to our mothers and our fathers, we would say, much depends upon yourselves, upon your *own conduct;* think not that, whilst in words you correct your child, and your own actions oppose your doctrine, a character such as you may desire shall arise —impossible!—To those concerned in the education of youth, our schoolmasters generally, the clergy, and our doctors, who preside at the superior fountains of what is termed learning, be assured, most learned sirs! that not all the knowledge contained in all the tomes, ponderous or light, or grave or gay, which adorn your shelves, will prevail against that living example which is seen in your own persons, and the usages around you. To our governors we would say, men become virtuous or vicious, happy or miserable, according to the circumstances by which they are surrounded; to you more immediately belongs the task of forming such a circle. To expect men to become peaceable, orderly, and virtuous, whilst causes are continually operating to make them the reverse, is as absurd as to preach peace to the winds.

We would not, however, be misunderstood here. Although living example is the most powerful of all means to fashion the human mind, the human character, we must not conclude that other means have no weight: for assuredly they have, and, sometimes, great and important weight too. Next to living example or *actions*, opinions and conduct may be inculcated through the medium of *language*, with great effect; and that effect will be greatest in proportion to the manner in which it is conveyed. Who needs to be told, that an eloquent discourse, combining at once simplicity and elegance of diction, and an appeal to the most powerful feelings of the mind, makes more impression when spoken with grace and effect by a person of whom we entertain a high opinion, than when read in the closet. This disposition of the mind to be impressed by living eloquence, has prevailed in every country having the least pretensions to civilization, and, under suitable regulations, it offers many and solid advantages; but it is exceedingly liable to be abused; and we are disposed to believe, that more mischief than good has been hitherto effected in the world by it: we hope, however, that this will not be always the case.

Another, and upon the whole, perhaps a better, medium for the conveying of instruction, is *lectures*. We have daily examples in this metropolis, that the various sciences are best taught by such means, and surely, the science of the formation or education of the human mind, may be effectually brought before us, and be made both comprehensible and practicable.

The last means for the education of the human mind, is solitary reading. This is, it is true, much less immediately effectual than either of the other methods to which we have alluded, but, from its nature, it may be made almost as universal as living example, and hence its effects are, and whilst mankind continue to acquire the art of reading, and whilst books are to be obtained, will be, great and effective.

We cannot pursue this subject further. In this short view of the human mind, and of its education, we have not been influenced by any fanciful theory, or ingenious speculation, but have endeavoured to confine ourselves to a contemplation of its actual structure, and of its capabilities, which, the more they are known, the more they must become under the control and influence of man himself. If the end of all human existence be happiness, as we presume it is, that happiness is best obtained by studying attentively the human mind, and the mode in which it may be made subservient to that end. This study is, therefore, the paramount duty of all our species, and from which none is exempt. It can scarcely be necessary to add, as a corollary to what has been said, that the happiness which we all seek, is most certainly found in virtuous actions. See Idea, Education, Phrenology, &c.

MINE, in natural history, a deep pit under ground, out of which various kinds of minerals are dug: the term is more particularly applied to those which yield metals.

A machine for preventing accidents in descending mines, invented by Mr. Prior, is described in the 36th vol. of the Transactions of the Society of Arts.

Mineral Tar. See Tar.

MINERAL, or Medicinal Waters, those waters holding minerals in solution, or which are of such a degree of heat as to be instrumental in the alleviation or cure of some disease.

An account of the principal mineral waters of this country will be found under their separate heads in the order of the alphabet, to which, therefore, the reader is referred. We shall here chiefly consider their general composition, properties, and the mode of analyzing them.

The substances found in mineral waters may be arranged under four heads: Air and Gases; such as atmospheric air; *very common;* generally in the proportion of $\frac{1}{28}$ of the bulk of he water; or oxygen gas; *rare;* or azotic gas: such are *Buxton*, *Harrowgate*, and *Leamington;* or sulphuretted hydrogen, as *Harrowgate* and *Moffat.* Acids in a free state, as carbonic acid; *very common.* Sulphurous acid; *some hot springs in Italy;* and boracic acid; *some lakes in Italy.* Alkalies and Earths; Soda, such as the *Geyzer* and *Rykum hot springs in Iceland.* Silica, such as the Geyzer, Rykum, Carlsbad, Pongues, and Pu. Compound Salts, such as sulphate of soda; *very common;* sulphate of ammonia, *some volcanic springs;* sulphate of lime, *very common;* sulphate of magnesia, *Epsom, and many other springs;* sulphate of alumina, *very rare;* sulphate of iron, *volcanic springs;* sulphate of copper, *waters from copper mines;* nitrate of potash, *some springs in Hungary, rare;* nitrate of lime, *some springs in Arabia:* nitrate of magnesia, *rare;* muriate of potash, *Uhleaborg, Sweden, rare;* muriate of soda, *very common;* muriate of ammonia, *some springs in Italy and Siberia;* muriate of barytes, *very uncommon;* muriate of lime, *very common;* muriate of magnesia, *very common;* muriate of alumine, *uncommon;* muriate of manganese, *Leamington;* carbonate of potash, *rare;* carbonate of soda, *very common;* carbonate of ammonia, *very rare;* carbonate of lime, *very common;* carbonate of magnesia, *very common:* carbonate of iron, *common;* hydro-sulphuret of lime, and of soda, *not uncommon in sulphurous springs;* sub-borate of soda, *lakes in Persia and Thibet.*

These substances are not all contained in any mineral water, seldom more than five or six being present together; and they are generally in very minute quantity, the character and properties of the water depending on one or two ingredients which predominate.

Mineral waters may therefore be arranged under the four following classes: *acidulous, or carbonated waters; sulphureous waters; saline waters; and chalybeate waters.*

The *acidulous waters* owe their properties chiefly to carbonic acid; they sparkle when drawn from the spring, or when poured into a glass; have an acidulous taste and become vapid when exposed to the air. Besides free carbonic acid, on the presence of which their qualities depend, their waters contain generally carbonates of soda, lime, magnesia, and iron; and sometimes muriate of soda. Some are *warm*, others *cold.* The most celebrated of these springs are Pyrmont, Seltzer, Spa, and Carlsbad. They are tonic and diuretic; and in large doses produce a sensible degree of exhilaration. But Pyrmont, Spa, and Carlsbad, containing also carbonate of iron, are especially useful in all cases of impaired digestion: while those which contain alkaline carbonates, as the Carlsbad and Seltzer, are more particularly employed in some calculous affections. See Gravel.

The *Sulphureous waters* derive their character chiefly from sulphuretted hydrogen gas; which in some of them is uncombined; while in others it is united with lime, or an alkali. They are transparent when drawn from the spring, and have the fœtid odour of rotten eggs, which is gradually lost from exposure to air, and the water becomes turbid. When they are strongly impregnated with the gas, they redden infusion of litmus, and exhibit some other of the characteristics of acids; and even in a weak state blacken silver and lead. Besides containing sulphuretted hydrogen gas, they are not unfrequently also impregnated with carbonic acid. They generally contain muriate of magnesia, or other saline matters which modify the power as a remedy.

The most important sulphureous springs in this country, are those of Kilburn, Harrowgate, and Moffatt; on the continent Aix la Chapelle and Barege; which are resorted to chiefly for the cure of cutaneous eruptions, and are applied locally as well as drunk. They are slightly sudorific and diuretic, and are apt to occasion in some patients head ach of short duration, directly after they are drunk. They are also employed for curing visceral and scrofulous obstructions, torpor of the intestines, and some dyspeptic and hypochondriacal complaints.

Saline mineral waters owe their properties to saline compounds. Those which predominate and give their characters to the waters of this class are either, *Salts*, the basis of which is lime; muriates of soda and magnesia; sulphate of magnesia, or alkaline carbonates, particularly carbonate of soda. They are mostly purgative, the powers of the salts which they contain being very much increased by the large proportion of water in which they are exhibited. The most celebrated saline springs are those of Cheltenham and Leamington, in England; Pitcaithly in Scotland; and Sedlitz on the Continent. They are employed in diseases which require continued and moderate intestinal evacuations, such as dyspepsia, hypochondriasis, complaints of the liver, jaundice, and scrofula. They are more grateful to the stomach when carbonic acid also is present, and when they contain iron; as in the case of the Cheltenham spring, their tonic powers, combined with their purgative qualities, render them still more useful in dyspeptic complaints.

To this class the waters of the ocean belong. The quantity of saline matter which **Sea water** contains, varies in different latitudes: thus between latitude 10° and 20° it is rather more than $\frac{1}{24}$th; at the equator it is $\frac{1}{25}$th, and at 57° north it is only $\frac{1}{27}$th. The saline ingredients in 10,000 parts of sea-water of the Firth of Forth, according to the last analysis of Dr. Murray, are muriate of soda 220,01; muriate of lime 7,84; muriate of magnesia 42,08; and of sulphate of soda 33,16. When brought up from a great depth its taste is purely saline; but when taken from the surface it is disagreeably bitter, owing perhaps to the animal and vegetable matters suspended in it. Its specific gravity varies from 1,0269 to 1,0285; and it does not freeze till cooled down to 28,5° of Fahrenheit. Its medicinal properties are esteemed the same as those of the saline purging waters, but more powerful; and, as a bath, its efficacy is generally supposed to be much superior to that of fresh water.

Chalybeate waters owe their properties to iron in combination generally with carbonic acid; and as this is usually in excess, they are often acidulous as well as chalybeate. They have a styptic or inky taste; they are, when newly drawn, transparent, and strike a black with tincture of nut-gall; even an oak leaf gives them more or less of a dark or purple tinge; but an ochry sediment soon falls, and the water loses its taste. If the iron be in the state of a sulphate, although the instances of this are rare, no sediment falls; and the black colour is produced by the tincture of galls, even after the water has been boiled and filtered. There are many chalybeates in Great Britain, but the most celebrated are Tunbridge, Brighton, and Peterhead: the Cheltenham spring also contains carbonate of iron; but on account of the large proportion of saline matter, and its stronger purgative properties, it is not ranked in this class. The Spa springs belong also to this class. It cannot be disguised, however, that many of these owe their celebrity to accident or to fashion. There is an excellent chalybeate water arising in the little hamlet of **LADY-WELL**, near Lewisham, which, were it sung by poets, and descanted upon by some of our medicinal writers, would, we have reason to believe, soon obtain attention, were not its contiguity to the metropolis an insuperable barrier to its fame.

Chalybeate waters are powerful tonics, and are employed in dyspepsia, scrofulous affections, amenorrhœa, chlorosis, and other diseases of debility, for which the artificial preparations of iron are used. When the water is a carbonated chalybeate, it should be drunk the moment it is drawn from the spring; but the same precaution is not necessary when it contains a sulphate of iron.

The general effects of mineral waters are modified by temperature, whether they be taken internally, or externally applied. In some springs, as those of Bath, Matlock, and Buxton, their virtues depend almost altogether on temperature; and in others, as Malvern, which has been found to contain scarcely any foreign matter, the simple diluent power of the pure water seems to produce the benefit which results from drinking them. Some of the good effects of all of them must however be allowed to proceed from change of scene, relaxation from business, an alteration in habits, amusement, temperance, and regular hours: and, under such circumstances, the drinking of the waters at the springs, possesses advantages which cannot be obtained from artificial waters, however excellent the imitations may be; nor even from the natural waters, when bottled and conveyed to a distance from the springs.

In *analyzing mineral waters*, the first circumstance to be attended to is to determine the gross weight of the substances held in solution. This is to be done by first ascertaining the specific gravity of the mineral water; then substracting from it the specific gravity of distilled water, (both expressed in whole numbers,) multiplying the remainder by 14: the product is the gross saline contents, in a quantity of water denoted by the number employed to indicate the specific gravity of distilled water. Thus, if the specific gravity of the mineral water be 1,079, as that of distilled water is 1000, the remainder, after the subtraction of the latter from the former in whole numbers, will be 79, which, multiplied by 14, makes 1106; and therefore 110.6 is the sum of the saline contents of 1000 parts of the water; or 11,06 are contained in 100 parts.

The *aerial, or gaseous bodies* are first to be separated by boiling, for a quarter of an hour, as much of the water as will fill two-thirds of a glass retort, connected with an inverted jar, divided into cubic inches and tenths, full of mercury, and placed in a mercurial trough. The air and gases will pass over into the jar and depress the mercury; and when cool, after subtracting the air of the retort, the quantity of air expelled from the water may be easily determined.

The only gaseous bodies contained in water are atmospheric air, oxygen gas, azotic gas, carbonic acid gas, sulphuretted hydrogen gas, and sulphurous acid; of which the following exist together in the same water: oxygen gas and sulphuretted hydrogen gas; sulphuretted hydrogen gas and sulphurous acid. If sulphuretted hydrogen gas be present, it must be first separated; then the sulphurous acid and carbonic acid gas; and lastly the oxygen and azotic gases.

Sulphuretted hydrogen is known to be contained in water by its peculiar odour, by the water becoming turbid when exposed to the air, and depositing sulphur, by its reddening the infusion of litmus fugaciously, blackening paper dipped in a solution of lead, and precipitating nitrate of silver black or brown. It may be separated from the air obtained from water during boiling, by carrying the jar into a tub of warm water and introducing nitric acid, which absorbs the sulphuretted hydrogen.

Sulphurous acid gas is ascertained by the same tests as discover the presence of sulphuric acid and water.

Carbonic acid gas is detected by lime-water, occasioning a precipitate soluble with effervescence in muriatic acid; by reddening fugaciously tincture of litmus, and losing this property when boiled.

Oxygen gas, after the above gases are separated, may be examined by means of the solution of sulphate of iron, saturated with nitrous gas. A small graduated tube filled with the air to be examined, is to be plunged into this solution, and moved backwards and forwards for a few minutes. The whole of the oxygen is rapidly absorbed, and by marking its greatest absorption, its bulk in a given quantity of the air is ascertained.

Azotic gas or nitrogen is discovered by not being affected by any eudiometrical process.

Alkalies, even in minute quantities, are discovered in water by rendering the infusion of turmeric, or paper stained with it, brown. When the change is permanent, the fixed alkalies may be supposed to be present; when fugacious, the alkali is ammonia. An infusion of Brazil wood is rendered blue by the alkalies; but this is also the case with alkaline earthy carbonates. The addition of sulphuric acid produces effervescence. Tincture of nut-gall discovers iron; the colour is violet if alkaline carbonates, or earthy salts be also present; dark purple indicates other alkaline salts; purplish red sulphuretted hydrogen gas; and whitish and then black sulphate of lime. Boiling the water precipitates the earthy and metallic carbonates.

The Carbonates of the alkalies are ascertained to be present in mineral waters by the tests already mentioned, and by the water, after being boiled, throwing down a precipitate on the addition of muriate of magnesia.

The earthy carbonates require a more tedious process to be detected.

Sulphuric acid exists in mineral water sometimes uncombined, but more generally combined with alkalies and earths, forming sulphates, of which six in number are found in these waters, viz. the sulphates of potash, soda, lime, alumine, or common alum, magnesia and iron.

It is readily detected by muriate of barytes, when it does not exceed the millionth part of the water.

Sulphate of soda is detected by first evaporating the water to one half, adding a little lime-water as long as any precipitate falls.

Sulphate of lime is detected by an immediate precipitate being formed by oxalic acid, or oxalate of potash, which, although less sensible, is nevertheless a more accurate test.

Alum is detected by carbonate of magnesia, muriate of lime, muriate of magnesia, and succinate of ammonia.

Sulphate of magnesia may be detected in any water, previously freed from alum or uncombined acids, by hydro-sulphuret of strontia, which produces an immediate precipitate with this salt and no other.

Sulphate of iron, by its striking a black colour after it is boiled and has cooled, by the addition of tincture of galls.

Muriatic acid, either uncombined or combined, in mineral waters, is detected by nitrate of silver, which forms with it a white precipitate, insoluble in nitric acid; but the alkaline carbonates, if any, must be first saturated by nitric acid; and any sulphuric acid removed by nitrate of barytes.

Nitric acid never exists in an uncombined state in mineral waters, and even the nitrates are comparatively of rare occurrence.

We think it may be useful to close our article with a table of the component ingredients of the most celebrated mineral waters.

A VIEW OF THE COMPOSITION OF MINERAL WATERS.

One Pint, Wine-measure, contains the following ingredients.

	WATERS.	GASES			CARBONATES.			SULPHATES.			MURIATES.							AUTHORITY.
		Nitrogen. Cubic Inches.	Carbonic acid. Cubic Inches.	Sulphuretted Hydrogen. Cubic Inches.	Carbonate of Soda. Grains.	Carbonate of Magnesia. Grains.	Carbonate of Lime. Grains.	Sulphate of Soda. Grains.	Sulphate of Magnesia. Grains.	Sulphate of Lime. Grains.	Muriate of Soda. Grains.	Muriate of Magnesia. Grains.	Muriate of Lime. Grains.	Oxide of Iron.	Silica	Temperature.	Total of Saline contents.	
CARBONATED.	Seltzer	...	17,	...	4	5,	3,	...	...	...	17,	...	...	...	...	cold	29,	Bergman.
	Pyrmont	...	26,	...	...	10,	4,5	...	5,5	8,5	1,5	...	...	0,6	...	ditto	30,6	Ditto.
	Spa	...	13,	...	1,5	4,5	1,5	..	...	...	0,2	...	...	0,6	...	ditto	8,3	Ditto.
	Carlsbad	...	5,	...	5,	...	1,5	8,5	...	...	4,5	...	...	a trace	0,3	165°.	19,8	Klaproth.
	Ponges	...	30,	...	10,	1,2	12,	...	...	...	2,2	..	...	2,5	0,5	cold	28,4	Hassenfratz.
	Saint Parize	...	22,	...	...	0,[illegible]	11,5	...	...	13,	...	...	...	...	...	ditto	25,	Ditto.
SULPHUREOUS.	Harrowgate	0,8	1,	2,3	...	0,7	2,5	...	1,3	...	77,	11,	1,5	...	...	ditto	94,	Garnet.
	Moffatt	0,5	0,6	1,2	...	...	...	...	...	..	4,5	...	...	..	...	ditto	4,5	Ditto.
	Aix la Chapelle	...	...	5,5	12,	...	4,2	..	...	...	5,	...	...	...	...	143°.	21,2	Bergman.
	Cheltenham sulphur spring	...	1.5	2,5	...	...	...	23,5	5,	1,2	35,	...	...	0,3	...	cold	65,	Parkes and Brande.
SALINE.	Sedlitz	...	...	...	...	2,5	0,8	..	180,	5,	...	4,5	...	...	...	ditto	192,8	Bergman.
	Cheltenham pure saline	...	...	...	...	...	...	15,	11,	4,5	50,	...	...	...	...	ditto	80,5	Parkes and Brande.
	Bristol	...	3,5	...	...	...	1,5	1,5	...	1,5	0,5	1,	...	...	...	74°.	6,	Carrick.
	Buxton	0,2	...	...	...	...	1,3	...	...	0,3	0,2	...	...	0,03	...	82°.	1,83	Pearson.
	Bath	...	1,2	...	...	...	0,8	1,5	...	9,	3,3	...	...	a trace	0,2	116°.	14,6	Phillips.
	Scarborough	..	...	...	...	...	a trace	20,	...	9,	...	..	...	ditto	...	cold	29,	Saunders.
	Barege	..	..	uncertain	2,5	...	ditto	...	..	a trace	0,5	...	...	...	...	120°.	8,	Ditto.
	Plombieres	...	...	...	2,2	...	0,3	2,3	..	..	1,5	...	...	...	0,3	?	66,	Vanquelin.
	Kilburn	...	3,5	8,5 ?	...	0,5	1,	12,	37,	5,5	2,5	5,5	0,2	a trace	...	cold	64,2	Sehmeisser.
	Leamington New Bath	0,4	a trace	a trace	...	...	...	19,	..	14,	53,	1,5	...	0,8	..	ditto	88,3	Lambe.
	Leamington Old Bath	0.3	...	ditto	...	...	..	7,5	7,	18,	4 ,	...	...	...	...	ditto	73,5	Ditto.
CHALYBEATE.	Tunbridge	0.59	1,	a trace of oxygen	..	...	0,03	...	...	0,17	0,3	0,03	0,05	0,28	...	ditto	0,86	Scudamore.
	Cheltenham Chalybeate	...	2,5		0,5	...	...	22,7	6,	2,5	41,3	...	..	0,8	...	ditto	73,8	Parkes and Brande.
	Brighton	..	2,2			...	...	...		4,	3,	0,75	...	1,4	0,14	ditto	9,29	Marcet.

MINERALOGY, the science of minerals, or of those bodies which are obtained from the bowels of the earth, whether from mines, quarries, wells, or by any other means.

This science was for a long time without order or connexion, and although numerous facts were known, like chemistry, with which indeed it is most intimately connected, it was a complete chaos. The genius of a WERNER has, however, thrown great light on this important branch of natural history, and his system is embraced over most parts of Europe, as well as other parts of the globe. The following constitutes its general principles and arrangement. The classes are four, viz. Earths, salts, inflammables, and metals. The earthy fossils, or minerals, compose the greater part of the crust of the earth, and generally form a covering to the rest. They are not remarkable for being brittle, heavy, or light coloured ; are little disposed to crystallize, are uninflammable in a low temperature ; insipid ; and without much smell. The saline minerals, are commonly heavyish, soft, and possess some degree of transparency. The inflammables, are light, brittle, mostly opaque, of a yellow brown, or black colour, seldom crystallize, and never feel cold. The metallic fossils are heavy, generally opaque, tough, malleable, cold, not easily inflamed, and exhibit a great variety of colours of a peculiar lustre.

Under each of these classes are various genera, species, sub-species, and varieties, which it is not consistent with our plan to enumerate, but which are well worthy the attention of those who desire to make mineralogy their study. An account of the most important subjects of this science will be found under various heads, in the order of the alphabet, to which, therefore, we refer.

MINIUM, red lead. See LEAD.

Minow. See CARP.

MINT, or *Mentha,* a genus of plants comprehending twenty species, almost all natives of Europe ; two or three of India, and one of America ; twelve common to the wastes, wet fields, ditches, and rivers' banks of England. The following are the chief :

The *Viridis,* or Spearmint, is common to our marshes, and flowers in August ; it is cultivated for culinary, as well as medicinal use. The stalks are generally cut just as the flowers appear; but for obtaining the essential oil the flowering plant is preferred ; it should be cut in dry weather.

Spearmint has a strong aromatic odour, and a warm, slightly bitter taste, neither of which qualities is impaired by drying. Both alcohol and water extract its virtues, and in distillation with water, an essential oil is obtained, which possesses the concentrated virtues of the plant.

The dried stalks and leaves are stomachic, and carminative, an infusion of which is serviceable in allaying sickness and vomiting, in a weakened state of the stomach ; and is also a common diluent in febrile diseases, particularly those accompanied with debility.

A *Water of spearmint* is made thus : Take half a pound of the dried plant, with as much water, that after distillation a sufficiency may remain to prevent burning, distil over a gallon. This is a convenient vehicle for other more active medicines of the same nature.

A *Spirit of Spearmint* is made thus : Take of spearmint dried, a pound and a half ; proof spirit a gallon ; water sufficient to prevent burning. Macerate for twenty-four hours ; then distil a gallon by a gentle heat. This is a useful carminative in nausea and flatulence, and is added occasionally to purgatives. The dose, when taken alone, which it rarely, if ever, is, is from one to four fluidrachms.

The *oil of spearmint* is stimulant and carminative. The dose dropped on sugar, or rubbed with mucilage, is from two drops to five or more.

The *Piperita,* or Peppermint, is found wild in our wet fields, but is cultivated largely in the neighbourhood of London, for medicinal use. See PEPPERMINT.

The *Pulegium,* or Penny royal, with flowers in whorls, is found also on our wet heaths, and is employed medicinally like the two preceding, but it is of little moment, although the London colledge orders a distilled water, a spirit, and an oil to be prepared from it.

The *Cervina*, or Harts penny royal, with flowers in whorls, is a native of Montpellier, and similar in virtues to the preceding.

The *Aquatica*, Water-mint, or horsemint, is frequent in moist meadows, marshes, and shallow waters. It is less agreeable than the spearmint, and in taste bitterer and more pungent. It may be used with the same intentions as the spearmint, but it is generally esteemed much inferior.

These are all easily propagated by cuttings, or dividing the roots.

MINUTE, in calculations of time, the sixtieth part of an hour,

Mirror. See Burning-glass and Looking-glass.

Miscarriage. See Abortion.

MISER, a person who, possessing money, esteems it for its own sake, rather than for the comforts which it brings, unwillingly parts with it, and, very often, in order to retain it, denies himself the conveniences, and sometimes even the necessaries of life. A miser is always deficient in genuine benevolence; although, such is the perversity of the human character, many misers have left considerable bequests for charitable purposes! See Avarice, and Honesty.

MISLETOE, or *Viscum*, a genus of plants comprehending twelve species, chiefly natives of the West Indies, and the Cape: one only of European growth, the *album*, an evergreen shrub, with lanceolate, obtuse, dull green leaves: stem forked; heads of the flowers axillary. It is a parasitic shrub, growing on the oak, apple, pear, hawthorn, service, hazel, maple, ash, lime-tree, willow, elm, horn-bean, &c. It is supposed to be propagated by birds, especially by the field-fare and thrush, which feed upon its berries, the seeds of which pass through the bowels unchanged; and along with the excrements adhere to the branches of trees, where they vegetate. The misletoe of the oak has, from the time of the druids, been always preferred to that of other trees, but with no just reason: it was formerly in our materia medica, and said to be useful not only in epilepsy, but in other spasmodic diseases. It is, notwithstanding, scarcely heard of in modern medicine.

Sheep eagerly devour this plant; it is even said to preserve them from the rot.

Mist. See Fog.

MITE, or *acarus asiro*, an animal infesting cheese. (See Cheese.) It also breeds in flour, meal, &c. The most effectual method of expelling these noxious vermin is, it is said, to place a few nutmegs in the sack or bin, containing the flour, as the odour of that spice is insupportable to them; or decorticated branches of the lilac, or elder trees, put into the flour, will answer the same purpose. The itch is occasioned by a species of mite. See Itch.

Mithridate. See Venice Treacle.

Mithridate-mustard. See Shepherd's Purse.

Mitre, in helminthology. See Volute.

MIXTURE, in medicine, a fluid composed of two or more ingredients. Various mixtures are ordered by the colleges: See Camphor, Chalk, Lignum Vitæ, &c.

Mock orange. See Syringa.

Mock privet. See Phillyrea.

Mocking bird. See Thrush.

MODERATION, in morals and good manners, that conduct which is opposed to every species of violence. Whilst the impetuous and turbulent attempt to carry every thing before them, and are often disappointed, the moderate and unassuming, attract the attention of the good and the wise. Moderation in our pursuits, and our expectations, is the surest way to obtain happiness.

MODESTY, in morals, that conduct which is at once unassuming, unostentatious, pleasing, and pure. In the female sex, modesty adds unspeakable charms and grace to beauty and to virtue; in the male sex, it enhances merit, and irresistibly wins our esteem.

MOFFATT-WATER, a cold, sulphureous water, obtained at the village of Moffatt, in Scotland; when first drawn, it appears rather milky and blueish; its smell is sulphureous and saline, similar to that of Harrowgate. It appears to be chiefly useful in cutaneous eruptions, in dyspepsia, and in inaction of the alimentary canal. See MINERAL WATERS.

Moirée metallique. See TIN-PLATE.

Molasses. See SUGAR.

MOLE, or *Talpa*, a genus of animals which live under the earth, digging cylindrical holes; their food worms; fore teeth unequal, upper six, lower eight; tusks solitary, upper larger: grinders, upper seven, lower, six. Head thick, lengthened into a snout: eyes very small, covered; earless; body thick; legs short, fore feet broad, large, shorter than the hind feet with longer claws. The species are four, as follow:

The *Europæa*, or European mole, with a short tail, and five toed; four other varieties from colour—white, yellow, cinereous, or diversified; about five inches and three quarters long; hair close, short, and softer than the finest velvet. Inhabits Europe, except Ireland and Siberia, as far as the river Lena; found also in the north of Asia and Africa. Burrows with vast rapidity; breeds in the spring; brings four or five young at a time; raises no hillocks in dry weather.

The *Asiatica*, Cape or Siberian mole, is tailless: fore feet three toed. Inhabits the Cape of Good Hope; body above, varied with glossy green and copper-colour; below, brown.

The *Longicaudata*, or Long-tailed mole, has the tail half the length of the body; feet, five toed; hind feet scaly; inhabits North America; hair soft, long, rusty brown; four inches and a half long; tail two.

The *Rubra*, or Red mole, with a short tail; fore feet, three toed; hind feet, four toed.

The most effectual method of extirpating moles is by attending to the periods of the day in which they usually carry on their operations, and by strika spade into the ground, so as to cut off their retreat, they are easily dug out; or by setting traps, consisting of a hollow wooden semicylinder, each end of which is furnished with grooved rings, containing two nooses of horse-hair, fastened loosely in the centre, by means of a peg, and are stretched above the surface of the ground by a bent stick, or a strong hoop. As soon as the mole passes half way through one of these nooses, and removes the central peg in his course, the curved stick rises in consequence of its elasticity, and thus strangles the animal. It is said, that they may be also attracted, in large numbers, by placing a few large living lobsters, of which they are fond, in a deep glazed earthen vessel, under the ground, and from which when in it, the mole cannot escape. It has, however, been strongly questioned, whether by its destruction of worms, this be not a more useful than injurious animal.

MOLE, in anatomy, various substances which are formed in the uterus, arising chiefly from imperfect conception.

Mole cricket. See CRICKET.

Mole plough. See DRAINING and PLOUGH.

Mole rat. See RAT.

MOLTEN GREASE, called also MORFOUNDER, or BODY FOUNDER, a peculiar affection of the bowels of horses, in which the dung discharged is extremely greasy. Horses which are fat, unaccustomed to exercise, or have been recently taken from grass, are most liable to it. It appears, however, that it is rather a symptom than a disease; it is commonly produced by violent or long continued exertion when a horse is not prepared for it. Plentiful bleeding is the first and most important remedy for this disorder, which may be repeated after a few hours, should it appear necessary. If there be griping pains, and if the dung be voided in small slimy knobs, give a pint of castor oil; but if the bowels be loose and the dung have the greasy appearance, let the horse take frequently some decoction of linseed, oatmeal gruel, or gruel made with arrow root. On recovery from this disease, should there be a tendency to costiveness, bran marshes or green food should be given. See **FEVER.**

Molucca, or **KING CRAB.** See **MONOCULUS.**

MOLYBDENA, or *Molybdænum*, a metal of a whitish grey colour, and of excessively difficult fusion. According to **HIELM**, its specific gravity is 7,4; according to **BUCHOLZ** it is 8,6. The sulphuret is the most common natural compound of this metal. It is found in France, Spain, Sweden, Saxony, Siberia and Iceland, in gangues of feldspar, lithomarge, or quartz. To procure the metal the native sulphuret is powdered and exposed under a red hot muffle till converted into a grey powder, which is to be digested in ammonia, and the solution filtered and evaporated to dryness. The residuum is dissolved in nitric acid, re-evaporated to dryness, and violently heated with charcoal.

When exposed to heat and oxygen, molybdena is acidified, a *white* crystalline sublimate of *molybdic* acid being formed; another combination of oxygen with this metal is *blue*, and called the *molybdous acid*. These acids combine with certain bases forming *molybdites* and *molybdates*.

The native molybdate of lead, (see **LEAD**,) occurs principally in crystals of different shades of yellow. It was first discovered in Carinthia, and has since been found in Mexico, Hungary, and Saxony. Molybdate of tin, obtained by adding molybdate of potassa to its metallic solution, is of a fine blue colour; and it is probable that some of the molybdates, were the metal more abundant, would be useful in the arts.

The native sulphuret is found in Bohemia, Sweden, and near Mont Blanc, in grey granite. It has been also found in England, chiefly in Cornwall; and in Scotland in Inverness-shire. It rarely occurs crystallized; generally massive, made up of separable laminæ. It is soft and unctuous to the touch, in colour like lead.

MOMORDICA, or **MALE BALSAM APPLE**, a genus of plants, consisting of eight species; the pome opens elastically; the following are the chief:

The *Balsamina*, or Common balsam apple, is a native of India, flowering in June and July; the leaves are glabrous deeply cut in a spreading palmate manner; stem trailing melon like, sending out many side branches with tendrils. Fruit angular, tubercled. The Indians cut open the unripe fruit, and infuse it in sweet oil, exposing it to the sun for some days till it acquires a red colour. Thus prepared, the oil is applied to wounds, being dropped on cotton, and is esteemed next to the balsam of Mecca.

The *Charantia*, or Hairy momordica, with angular tubercled fruit, white, yellow, or green on the outside; within very red, fleshy, one-celled, bursting elastically; a native of the East Indies, flowering in July and August.

The *Luffa*, or Egyptian momordica, with hairy oblong fruit, and a white flaccid esculent pulp of an insipid flavour, is a native of Arabia and the East Indies, flowering as the last.

The *Elaterium*, Elastic momordica, or Wild cucumber. See **ELATERIUM.**

All these plants may be propagated by sowing the seeds in a hot-bed in the same manner as cucumber seeds; and they require the same attention as the cucumber plant afterwards. The first three sorts are ornamental stove plants; the last will thrive in open borders.

MONARDA, or **AMERICAN FIELD-BASIL**, a genus of plants, consisting of seven species: those chiefly cultivated are the *fistulosa*, or Purple monarda, with purple flowers;—the *oblongata*, or Long-leaved monarda;—and the *didyma*, or Scarlet monarda, which is the species chiefly valued, and by far the most ornamental of the whole, has a perennial root; the stems are about two feet high; the leaves ovate, glabrous, and when bruised emit a refreshing odour; the flowers are in whorls, didynamous, and of a bright red colour; they appear in July, and in a moist soil will continue till the middle of September.

All these are natives of America, and

may be increased by parting the roots; some of them by slips and cuttings as well as seeds.

MONAS, in zoology, a genus of worms, invisible to the naked eye, most simple, pellucid, resembling a point. Five species: the *atomus*, found in sea water kept a long time, with a minute black dot, sometimes two;—the *punctum*, a solid opaque black point, found in fetid infusions of pears, moving in a slow wavering manner;—the *mica* is transparent, common in purer waters;—the *lens* is also transparent, and found in all waters, a round pellucid dot, frequently in masses; the *termo*, a most minute, simple, gelatinous point; found in most animal and vegetable infusions; of all known animals the most minute and simple, being so extremely delicate and transparent as often to elude the most highly magnifying powers, blending as it were with the water in which it swims.

MONEY, a piece of metal, paper, or other substance, to which public authority or usage has affixed a certain value, and, in regard to metals, weight also, to serve as a medium of exchange.

Money, although convenient, is not essential to the well-being of man, actual riches consisting not in money, but in the possession of those necessaries of which money only is the medium to procure. If metallic money be not essential to the well-being of man, still less is that perishable commodity, *paper money*, at any time desirable, although such is the effect of long habit, that the inhabitants of the British dominions, at the present time, consider Bank of England notes equal to any metallic currency whatever. And whilst even paper is a representative of real wealth, its use may be not only convenient but advantageous; but the facility with which paper money is made, induces, we fear, a creation of fictitious capital, the operation of which is always more or less deplorable, and unquestionably injurious to the best interests of man. Of such a system we can only say, may it end well. See BANK.

The various attempts to fix the permanent value of money have been, and ever must be, abortive, as the value of the metals of which money is best composed, as well as the necessaries and conveniences of life, depends upon circumstances over which neither individuals nor even nations have omnipotent control. See GOLD and SILVER.

Money-wort. See LOOSE-STRIFE.

Monk's hood. See WOLF'S BANE.

Monk's rhubarb. See DOCK.

MONKEY, APE, BABOON, or *Simia*, in zoology, a genus consisting of sixty-three species, scattered over the warmer parts of Asia, Africa, and America; none of them indigenous to Europe, except those inhabiting the rock of Gibraltar. This genus greatly resembles man in the uvula, eye-lashes, hands, feet, fingers, toes, nails, and other parts of the body, yet widely differ from him in intellectual faculties: memory retentive; imitative and full of gesticulations; chatter with the teeth and grin; macerate their food in their cheeks before they swallow it; are filthy, lascivious, thieving, gregarious; the prey of leopards and serpents. This genus is subdivided into the following sections: tailless, *Apes*;—tails short, *Baboons*;—tails long, not prehensile, cheeks pouched, haunches naked, *Monkeys*;—tails prehensile, without cheek pouches, haunches covered, *Sapajous*;—tails not prehensile, without cheek pouches, haunches covered, *Sagoins*. The following are the chief:

The *Troglodytes*, or Angola ape, head conic, body brawny, back and shoulders hairy, rest of the body smooth.

The *Satyrus*, Orang outang, Satyr, Jocko, Wild man of the woods, Troglodyte man, or Great Ape, is a rusty brown, hair of the fore arm reversed, haunches covered. Greatly resembles man even in the hyoid bone, yet, with the rest of his tribe, wants the nail of the great toe. From the structure of the larynx, muscles, and whole frame of the bones, evidently not designed to walk erect. Palms smooth, thumbs shorter than the palms; feet well formed, great toe short, the rest long. From three to five feet high; inhabits the island of

Borneo. The Pogo, another variety, without cheek pouches or callosities on the haunch, always walks erect; inhabits Java and Guinea; from five to six feet high. Another variety, resembling the last, but only two and a half feet high; docile, gentle, grave. The manners of this species when in captivity are gentle, and often affectionate, yet in the woods they are said to be often highly ferocious. The negroes consider them as capable of language, yet maintaining a stubborn silence because they may not be compelled to labour. They often attack and beat or kill the negroes; feed on nuts and other fruits; drive off elephants and other large animals with clubs, or even beat them with their fists; walk erect, but occasionally creep on all four. Climb trees with great agility, and commonly secure themselves by night among the branches. Rude huts of their construction are said to have been sometimes observed. Woods and mountains of difficult access are their only haunts; they associate only in small herds. A fire kindled at any time in the woods attracts them round it; they warm themselves eagerly while it continues to burn; but know not how to keep it alive or rekindle it. Their carriage and manners are grave and stately. It does not appear that they unite to practice any ingenious arts, or carry on any great enterprizes in common. The period of gestation and natural term of life not known. They are occasionally exhibited alive in Europe. In confinement they seldom discover much ferocity; but they perform many actions which are very similar to those of man. They will sit at table and help themselves with food like human beings, make signs for what they want, and express resentment when neglected.

The *Sylvanus*, or Pigmy, has naked haunches. The flatness of the face and nails, the nakedness of their haunches, the want of a tail, and their upright carriage, give this species also some resemblance to the human form; but they are not larger than a common cat, mild and docile. A native of Africa and Ceylon. This is the pigmy of the poets.

The *Lar*, or Long-armed ape, with naked haunches, has arms as long as the body. Body rough, and covered with black hair except the haunches; resembles the human figure; hideously deformed. Walks erect; never on all four; mild and gentle; native of the East Indies. Two feet and a half to four feet high.

The *Inuus*, or Magot, has naked haunches and an oblong head. This creature is a remove still further from the human form. Face like a bull-dog, height from three to four feet. A native of India, Arabia and Africa.

The *Sphinx*, or Great baboon, when erect is from three to five feet in height; excessively fierce, libidinous and strong; head like a dog, but very thick; middle of the face and forehead naked, of a bright vermilion colour. Body hairy of various colours, yellow, black, &c. Though mischievous and fierce they are not carnivorous, but live chiefly on fruits, roots, and seeds. They rob gardens by throwing melons, gourds, apples, pears, &c. from one to the other, being formed in a line from the place of pillage to their rendezvous. A native of the hotter parts of Africa, Borneo, and the Philippine islands.

The *Maimon*, or Ribbed-nose baboon, has blue cheeks, a nose ribbed obliquely on each side, and naked haunches; disgustingly ugly; weeps and groans like a man; from two to five feet long. The Smitten is also referable to this species, and so also is the *tre*, *tre*, *tre*, *tre* of Madagascar. A native of the Gold coast and other southern provinces of Africa.

The *Sylvatica*, or Wood baboon, when erect is about three feet high; inhabits Guinea; called by the English the man of the wood. The *Variegata*, or Yellow baboon, greatly resembles the last, except in size and colour, and its hairy hands; two feet high; a native of Africa. The *Cinerea*, or Cinereous baboon, is about two feet high, and supposed to inhabit Africa. The *Livea*, or Blue-faced baboon, is about three feet high. The *Platypygos*, or Brown baboon. The *Apedia*, or Little baboon;—the *Cristata*, or Crested baboon;—the *Nemestrina*, or Pigtail baboon, are all of this section which we can mention. It is remarkable that many females of this tribe, and especially those with haunches, menstruate.

Of the *Monkeys* and the rest of the genus, our account must be brief.

The *Hamadryas*, or Tartarian monkey, is cinereous; inhabits in vast troops the hottest regions of Asia and Africa. They are quite untameable; some are above five feet high. The *ursine*, or Bear baboon, appears to be a variety of this species: it is in numerous troops near the Cape of Good Hope. They can overpower the stoutest man; they become tolerably tame when confined.

The *Siliens*, or Wanderer, inhabits Guinea, the *lowando*, Ceylon; the *faunus*, or Malbrouk, is a native of Bengal; the *cynomolgus*, or Macaque, inhabits India, Guinea, and Angola. The *diana*, or Spotted monkey, is playful when young, and salutes passengers by nodding. The *sabæa*, or Green monkey, keeps in great flocks and inhabits different parts of Africa. The *æthiops*, or White eyelid monkey, inhabits Madagascar; a variety with a white collar. The *sephus*, or Mustache, is found in Guinea. The *aygula*, or Egret, is found in Java.

The chief of the *Sapajous* are: the *beelzebul*, or Preacher monkey, is a native of Brazil, and distinguished by assembling in groups, and one above begins as if it were to harangue, setting up so loud a howl, that a person at a distance would think a hundred joined in the cry; the rest, however, keep the most profound silence, till he stops and gives a signal with his hand; then in an instant the whole assembly join in chorus till he commands silence by another signal, which they obey in a moment; then the orator finishes his address, and the assembly breaks up. This species is very fierce, quite untameable, and bite dreadfully. The female presents the breast to the young like a human wet-nurse. Their flesh is eaten by the Indians.

The *Seniculus*, Old man of the woods, or Royal monkey, inhabits Cayenne and the river Amazon; the *paniscus*, or Four-fingered monkey, a native of South America, having only four fingers without a thumb; the *trepida*, or trembling monkey, inhabiting Guiana; the *apella*, Weeper, or Brown sapajou, inhabiting Brazil; the *sciurea*, or Orange monkey, the most beautiful of the tribe, a native also of Brazil, are all we can notice of this section.

Of the *Sagoins*, the *pithecia*, or Fox-tailed monkey, inhabiting Guiana, and easily tamed; the *midas*, or Tamarin, of South America; the *jacchus*, or Striate monkey, inhabiting Brazil; and the *rosalia*, or Silky monkey, inhabiting Guiana, only ten inches long, are all we can enumerate.

Monkey's Bread. See GOURD, SOUR.

MONKEY FLOWER, or *Mimutus*, a genus of plants, consisting of four species, natives of North or South America; they have blue or yellow flowers.

MONOCULUS, a genus of insects, comprehending sixty-eight species, found chiefly in Europe, a few in India, commonly in muddy waters or ditches, frequently in sea-waters, often parasitic on fuci, and other aquatic plants; many of them inhabit our own ditches and sea-coasts. The greater part are minute insects, requiring the assistance of a microscope to investigate their separate organs. They have from four to eight legs, formed for swimming, and very long: body covered with a crust or shell, divided into segments; eyes one or two fixed in the shell; most of the shells are bivalve; a few univalve. The two following are the most important species: The *polyphemus*, Molucca, or King crab, with an orbicular shell, inhabits India, and is the largest known insect, sometimes growing, from tail to snout, four feet in length. It is said to be generally found in pairs, male and female, swimming together. The *apus* has an oblong shell, tail ending in two bristles; inhabits Europe and our own country.

Monodon. See NARWHAL.

MONOPOLY, in commerce, the exclusive power or privilege of selling any thing. In a more extensive sense, monopoly implies the retention of any thing whatever for individual advantage or gratification, but which, at the same time, trenches upon the rights and just demands of others. All monopolies are, in principle, wrong, and should not be countenanced. It is more peculiarly the province of the statesman to guard against monopolies: for wherever monopolies are encouraged, or not counteracted, there a great inequality of conditions is most certainly found, and much misery the necessary result.

MOON, or *Luna*, in astronomy, one of the heavenly bodies which gives light during the night.

The moon was formerly supposed to have more influence on the affairs of this world than it is now known to possess. It is still believed to influence the affections of the mind usually denominated insanity, sometimes lunacy, from the classical name of the moon. It is still also supposed by many philosophers that the influence of the moon, in conjunction with that of the sun, and the diurnal motion of the earth, are the causes of the tides; whilst others believe that the motion of the earth alone is amply sufficient to explain all such phenomena. Till, however, we are in possession of more facts relative to all the supposed influences of the moon, the safest course is modest doubt.

MOON-BLINDNESS, a disorder in the eye of a horse, so denominated from its having been thought to increase and decrease according to the course of the moon. It generally occurs when a horse is in his sixth year. It scarcely ever admits of a cure. See CATARACT and EYE.

MOON SEED, or *Menispernum*, a genus of plants consisting of twelve species, chiefly natives of India; three of America; of these the chief is the *cocculus*, the berries of which are the common cocculus indicus of the shops; it has cordate, retuse, mucronate leaves, and a jagged stem. See COCCULUS INDICUS.

Moon-stone. See FELDSPAR.

Moon-trefoil. See LUCERN.

MOON-WORT, HONESTY, Satin flower, or *Lunaria*, a genus of plants, consisting of two species, both natives of Europe: the *rediviva*, with violet-coloured odorous flowers; and the *annua*, with a biennial root, and inodorous flowers. Both plants will grow in almost any soil or situation.

Moor-cock. See PARTRIDGE.

Moor-Hen. See COOT.

MOOR LANDS, in agriculture, are of various kinds. Sometimes they are in low and mild situations, where the upper soil is thin, or scantily supplied with vegetable mould; and where the bottom or under stratum is impervious and barren. These, in general, may be reclaimed with more or less advantage, according as they are near manure or markets, and other means of improvement. Others, on the contrary, are in situations much elevated above the level of the sea, where the surface is covered with heath and other coarse plants, and frequently encumbered with stones. Such moors are seldom worth the expense of cultivation, and, from their height, are only calculated either for woods or pasturage. Moors, however, which are not placed in high or bleak situations, and where the surface is close swarded, or covered with plants, and where the sub-soil is naturally either not altogether wet, or capable of being made sufficiently dry at moderate expense, may not only be reclaimed, but often can be highly improved. Indeed, where such lands are to be met with, they ought on no account to be suffered to remain, subject to commonable rights, and comparatively useless to the country, as they are capable of being reclaimed, and, if allotted and inclosed, might be rendered highly productive. See DRAINING.

Moor-tilting. See WARBLER.

Moose. See DEER.

MORALS, Moral Philosophy, or Ethics. As definitions of these terms will be found under the article Ethics, we have no occasion to repeat them here. Many systems of morals have been promulgated, but none which we have yet seen detailing our various duties, are such as we can unexceptionably recommend. Man is a progressive being, and, therefore, as his knowledge increases, so must the science of ethics become better understood and defined. We purposely avoid trenching on the province of the divine in this work, for many and important reasons; but, in treating of morals, we think it necessary once for all to observe, that the character of *Jesus Christ*, and the moral precepts which he taught, as handed down to us in the New Testament, are in such perfect accordance with our own sentiments, and with that system of universal benevolence which it is our desire to inculcate in this work, that we cannot, perhaps, more effectually serve the cause of virtue than by impressing upon our readers the contemplation and imitation of the conduct and behaviour of this extraordinary character. In his breast the debasing passion of revenge found no abode; he wisely distinguished betweenthe conduct and the individual; he inculcates love to our enemies as a principle of action; and of doing to others as we would they should do unto us. This last precept has, we are aware, been explained away by the sophism that it implies *were we in their places*. But in our judgment it is a precept which was designed to be taken in its literal and simple meaning, and which, were it uniformly acted upon, must produce a great revolution in the manners and actions of men. We therefore again press upon our readers the moral character and conduct of Jesus Christ as fit objects for imitation, and sure we are that such imitation will not fail to make them wiser and better men. Having said this we cannot add to the impression which we desire to make by any farther observations upon morals here; but we refer our readers to Ambition, Benevolence, Bigotry, Chance, Character, Circumstances, Conscience, Difference of opinion, Education, Mind, &c., and to the various articles on the passions throughout our work.

MORASS, a marsh, fen, or low moist ground, which receives the waters from above without having any descen to carry them off. See Bog, Draining, &c.

MORBUS, in medicine, the same as disease.

MORDANT, in dyeing, a substance with which the cloth, thread, or raw material is previously impregnated, in order to fix the colour more permanently. The mordants most frequently employed are, acetate of alumina, sulphate of iron, and muriate of tin. See Dyeing.

MOREL, or *Phallus*, a genus of fungi, consisting of nine species, of which the three following are common to our own country: the *esculentus*, or Esculent morel, found in woods, meadows, and pastures. The substance, when recent, is wax-like, and friable, of a whitish yellow colour, changing to brownish as it decays: the height of the entire fungus being four or five inches. The stalk is thick and clumsy, somewhat tuberous at the base, and hollow in the middle. The pileus is either round or conical; generally about the size of an egg, often much larger; hollow within. The seeds, when magnified, are oval. It is in great esteem, both recent and dried, as an ingredient to heighten the flavour of ragouts; but of its uses as food we cannot speak with commendation. The *impudicus*, or stinking morel, is found in woods and banks. It arises from the earth under a veil, or volva, shaped exactly like a hen's egg, of the same colour, having a long fibrous radicle, or base. As the volva bursts the plant diffuses an intolerable stench, which is so strong that the plant may be discovered by the scent alone long before it appears in sight. The *caninus*, or Dog-morel, is found also in woods and wild banks.

Morella Cherry. See Cherry.

MORMYRUS, a genus of fishes,

consisting of three species, having a smooth head, numerous teeth, and scaly body; all inhabitants of the Nile.

MORNING, that part of the day which precedes the meridian or noon. Fashion has unfortunately effected a great revolution in the meaning of this word, morning being, with the *fashionable*, all that part of the day previous to the hour of dinner, and that hour is, too often, late in the afternoon or evening. The morning, however, properly so called, from the rising of the sun till noon, is unquestionably the best time for every kind of both corporeal and mental exertion, and he who is wise will take care that such period is not consumed in sloth. See BED-TIME, BREAKFAST, DAY, DINNER, DIGESTION, &c.

MOROC, the Indicator, or honey cuckoo. See CUCKOO.

Morocco. See LEATHER.

Morocco reed. See PHEASANT'S EYE.

MORPHEW, a term implying some disease of the face, not distinctly pointed out; it is said to be attended with scurf. See LEPROSY, and TETTER.

MORPHIA, a substance to which the narcotic power of certain vegetables is referable. It may be obtained from powdered opium by triturating it into a paste with dilute acetic acid; then pour caustic ammonia into the filtered solution, and evaporate; during the evaporation a brownish substance separates, which, by digestion in a small quantity of alcohol, becomes nearly colourless, and is pure morphia. It is sparingly soluble in water, but readily soluble in alcohol and ether, from which it may be obtained in quadrangular crystals. It is highly poisonous, and narcotic, even when administered in very small doses; it is fusible and combustible. See OPIUM.

MORSE, WALRUS, MANATE, or *Trichechus*, a genus of mammalian animals, fore-toothless in the adult; tusks upper solitary; grinders in both jaws consisting of a furrowed bone; body oblong; lips double; hind feet stretched back, forming a fin. Three species, all of which inhabit the sea; feeds on corallines and shell worms, and not on flesh; they are as follow:

The *Rosmarus*, Morse, Sea-horse, or Sea-cow, inhabits Spitzbergen, Nova Zembla, Hudson's Bay, the Gulf of St. Laurence, and the Icy sea. They are gregarious; shy, but extremely fierce; if wounded in the water will follow and attempt to sink the boat; they roar very loud. This animal has a round head, small mouth; small fiery eyes; two small orifices instead of ears; neck short; body thick, tapering towards the tail; skin thick, wrinkled, with short brownish hair, thinly dispersed; legs short, five toes on each foot, connected by a web, a small nail on each; hind feet very broad. Eighteen feet long, ten or twelve round in the thickest part; tail short; the tusks very remote, acuminate, sometimes weighing thirty pounds each; the ivory, with interwoven fibres, not easily turning yellow; the central part brownish: the young have two small fore-teeth in the upper jaw. They are seen in herds, sleeping on islands of ice: if awakened they fling themselves with great impetuosity into the sea. They do not go on land till the coast is clear of ice. The moment the first gets on shore, so as to lie dry, it will not stir till another comes after and forces it forward by beating it with its great teeth; this is served in the same manner in succession till the whole have landed. They bring one, or at most two young at a time. Besides man, they seem to have no other enemy than the white bear, with which they have terrible combats, but generally come off victorious, by means of their great tusks. One walrus produces about half a ton of oil. They are generally destroyed when they are on shore.

The *Dugong*, or Indian walrus, inhabits the sea between the Cape of Good Hope and the Philippine Islands.

The *Manatus*, Manate, or maneti, is tuskless; three varieties: the *borealis*, or Whale-tailed manate, is hairless, toeless, and clawless;—the *australis*, or Round-tailed manate, has the fore-feet four or five toed, clawed;—the *siren*, or Sea-ape, has the ears erect, and sharp pointed. The fore-feet of the first are little more than pectoral fins, and serve only for swimming, for it never goes on shore like the walrus and seal. It brings forth in the water, and, like the whale, suckles its young in that element. They live in families of a male and female, with two young ones. The affection between the male and female is very great. They are extremely voracious, and when filled fall asleep on their backs. During their meals they are so intent on their food, generally sea-weeds, that any one may go among them and select those which he likes best. The female brings but one young at a time, and suckles it with two teats. They swim with their backs generally above water; and numbers of gulls are continually perching on them, and picking out a peculiar species of louse with which their skins are infested. They are of an enormous size, some are twenty-three feet long, and weigh 8000lbs. The skin is very thick, black, and full of inequalities, like the bark of oak; it has no hair on it; but it is so hard as scarcely to be cut with an axe. Beneath the skin is a thick blubber, which tastes like oil of almonds. The flesh is coarser than beef, and soon putrifies; the young ones taste like veal. The skin is used for shoes, and for covering the sides of boats. Inhabits the north-west coast of the American, the African, and European seas. They defend each other, when attacked, like the first species.

The round-tailed manate, is ten or twelve feet long, or more, and sometimes weighs twelve hundred pounds. The skin is very thick and hard, having some few hairs scattered over it. Those which entirely inhabit fresh water not so large. They are found in the rivers of Africa, from Senegal to the Cape, and in those also of South America; they sometimes live in the sea, near the mouth of some great river. These animals are easily tamed, grow very fond of music, and are the dolphin tribe of the ancients. One of them, it is said, was so tame in Hispaniola, that it would appear as soon as it was called by its familiars, and carry over the lake ten Indians at a time, singing and playing upon its back.

The Sea-ape is five feet long, with a head like a dog's; erect, sharp ears; large eyes; a sort of beard on both lips; body round, thickest near the head, and tapering to the tail; covered with thick hair, grey on the back, red on the belly; it has neither feet nor paws; plays a thousand monkey tricks around ships. It seems also to be alluded to by the ancients under the name of dolphins.

Mortality, Bills of. See BILLS OF MORTALITY, and SMALL POX.

MORTAR, in building, a cement made of quick lime and sand, or ashes, fine gravel, &c., for the purpose of holding stones, bricks, &c., together.

The principles of making mortar do not seem by any means so well understood, even at this enlightened period, as could be wished, or indeed as they ought to be from the present improved state of our chemical knowledge. We have paid considerable practical attention to this subject, and shall therefore endeavour to establish a basis on which we think the art of making mortar ought to be erected.

It is well known that the first requisite in making good mortar is good lime, and that it should be as devoid of any clayey matter as possible. We have seen, under the article lime, that in order to make quick-lime, common lime stone, or carbonate of lime, is exposed to an intense heat, which drives off from it its carbonic acid, its quality as a stone being by this process destroyed; but it is, nevertheless, by such means in a state, by a suitable addition of carbonic acid, to become stone again. In the making of mortar our chief object, therefore, is to supply the carbonic acid necessary for such purpose: for it is well known, that quick-lime alone, mixed with water, will not make good mortar. Various bodies have been added to lime for this purpose; finely sifted coal ashes are one of these, and where the colour of the mortar is of no moment, perhaps equal parts of quick-lime and finely sifted coal-ashes, such as those met with in London, form a mortar *equal to any, for common purposes*, which can be made; this mortar possesses also the peculiar property of resisting moisture, and is therefore well calculated for such work in which the passage of water is to be prevented; its use, of course, in lining water cisterns is important. Sea sand, and the sand obtained in sand hills near the sea, will make tolerable mortar, but by no means so good as sand, or gravelly sand which can be obtained beneath the surface of the earth, and where spring water is abundant. The fine alluvial matter of fresh-water brooks, and rivulets, provided it does not contain much clay, yield, with about an equal mixture of quick-lime, a good mortar; and indeed, where better matter cannot be had, clay itself is sometimes used, but we cannot recommend it. From practical observation we can say, that the best lime for mortar is such as is obtained from hard and compact lime-stone; that the lime obtained from chalk is by no means so good; and that the best admixture with lime for making mortar is such that, when mixed with water, it assumes little of the pappy consistence which any mixture of clay or soft pulverised stone generally gives it. Two parts scrapings of the public roads, especially when they are repaired with lime-stone, will make, with one part lime, an excellent mortar for plastering, but, as a cement for bricks and stones, it is not to be recommended. Plastering mortar has generally some addition of cow-hair.

In general, therefore, equal parts of quick-lime, and the article which is to supply the carbonic acid, whether sand, fine gravel, coal-ashes, or other matter, will be a fair proportion of each ingredient, but it may happen, from peculiarity of circumstances, that this general rule ought to be departed from; the judgment of the operator must, of course, in such case decide. It must not be overlooked too, that *water* is a necessary ingredient in the composition of mortar; and from our theory it follows that that which contains the greatest quantity of carbonic acid, unmixed with *substances not congenial to the composition of mortar, such as clay, and vegetable matter*, must be the best. Besides the carbonic acid and lime, which are the most important parts in the formation of mortar, there is reason for concluding that the water itself is more than a medium for the formation of the carbonate of lime; but what its precise operation is, we are not prepared to say.

Besides such mortar above described, there are various others used for particular purposes, such are PLASTER OF PARIS, or powdered gypsum, STUCCO, TARRASS, &c. See the respective articles.

MORTAR, a utensil of different shapes, made either of marble, glass, earthenware, or some metal, for various purposes, in pharmacy and the arts. See PHARMACY.

MORTIFICATION, the loss of vitality of any part of the body.

The causes of mortification are exceedingly various. It may arise from excessive inflammation, whether phlegmonous, or erysipelatous, although the last is said more frequently to become gangrenous than the first; and when both are conjoined, it is said there is a disposition more apt to run into a mortified state. Causes which impede the circulation of the part affected, will also produce mortification, as strangulated hernia, tied polypi, or a limb being deprived of circulation from a dislocated joint. Preventing the entrance of arterial blood into a limb, is also another cause. Paralysis conjoined with pressure, old age, and ossification of the arteries; cold, particularly if followed by the sudden application of heat, and likewise excessive heat applied to a part, may produce mortification.

The symptoms of mortification which occur after inflammation are various, but generally as follow; the pain and fever suddenly diminish, the part affected becomes soft, and of a livid colour, losing at the same time, more or less of its sensibility. When any part of the body loses all motion and natural heat, and becomes of a brown, livid, or black colour, it is said to be mortified. As long as any sensibility, motion, or warmth, continue in the part, the state of the disorder is said to be gangrene, (see **Gangrene**;) under which head many observations relative to the treatment of mortifications will be found. Nor do we know that we can add any thing further relative to the treatment of this complaint, but to observe, that it is one of the utmost danger, in which no trifling or tampering should be permitted, and that, therefore, the best medical advice should be at once resorted to. We may, however, add, in the mortification or loss of action in the extremities in old age, a stimulant diet, and embrocations of brandy, spirit of wine, and camphor, applied to the part, promise the most successful relief. And, indeed, brandy taken both internally and externally applied, will be often one of the best remedies, in most other kinds of this disease.

MORTMAIN, an alienation of lands and tenements to any corporation and their successors, as bishops, parsons, vicars, &c., which is restrained in Magna Charta, and cannot be done without the king's license. By the 9th Geo. II. c. 36, all lands, tenements, &c. for charitable use, must be given by *deed*, twelve calendar months, at least, before the death of the donor, and be enrolled in chancery six months after the execution, or the gift is void. But this act does not extend to prevent the making bequests merely of money, to charitable uses.

MORTUARY Fee, a sort of ecclesiastical heriot, claimed by the clergy, in many parishes of this country, upon the death of a parishioner. It is, however, only claimed where the person died possessed of some property; and by 21 Hen. VIII. c. 6, it is enacted, that for every person who does not leave goods to the value of ten marks, nothing is to be paid; for every person who leaves goods to the value of ten marks, and under 30 pounds, 3s. 4d.; above thirty and under forty pounds, 6s. 8d.; if above 40*l*. of what value soever they may be, 10s. and no more. But no mortuary, throughout the kingdom, shall be paid at the death of a feme-covert, nor for any child; nor for one of full age, not a housekeeper; nor for any way-faring man, such way-faring man's mortuary being to be paid in the parish to which he belongs.

MOSAIC WORK, an assemblage of little pieces of glass, marble, precious stones, &c., of various colours, cut square, cemented on a ground of stucco, in such a manner as to imitate the colours and gradations of painting. This work was first practised by the Greeks, and afterwards brought to perfection by the Romans.

MOSCHATELL, the **Tuberose, Hollow Root**, or *Adoxa*, a genus consisting of one species only, the *moschatellina*, an indigenous perennial, common to the woods of our own country. The ripe fruit has the flavour of strawberries, and the plant itself the odour of musk, for which it may be used for scenting our wardrobes.

MOSS, a common term for various tribes of plants, the humblest of the vegetable kingdom.

The whitish Moss, called in some parts of England **Mesh**, which grows upon apple and other garden trees, is a species of *Lichen*, and is supposed to be very injurious to them. See **Liverwort**. The immediate remedy is scraping it off from the body and large branches, by means of a wooden knife, that will not hurt the bark; or by means of a piece of rough hair cloth, which does very well after a soaking rain. But the most effectual cure is said to be by drawing off all the superfluous moisture from about the roots of the trees, and that it may be greatly guarded against in not planting the trees at first too deep. The two last remedies we doubt.

MOSSES, or *Musci*, the second order of the class *cryptogamia*, into which the botanical system of Linnæus is divided.

An account of the mosses will be found under the articles CLUB-MOSS, MARSH-MOSS, &c.

One of the greatest difficulties in the management of old pastures is, to prevent that immense growth of mosses, called *hypnum*, or FEATHER-MOSS, of which there are no less than ninety-three species, seventy-six being indigenous to our own country. By the growth of these, many of the finer species of grass are apt to be overwhelmed. Drainage, and the use of rich composts, are in this case necessary. Harrowing and cross-harrowing with a cross-harrow, loaded with a weight, so as to go from one to two inches deep, with a sprinkling of grass seeds afterwards, and some lime, or well-prepared compost, are the most likely means of destroying the moss and improving the pasture. Feeding sheep with oil-cake, and allowing them to pasture on the land, has also been found effectual for the destruction of moss, and bringing up abundance of grass; but the radical remedy is, to plough up such grass lands upon the first appearance of moss, or before it has made any considerable progress.

MOSS-LAND, a term used in Scotland, and various parts of England, for denoting what is more properly called bog or peat land. We have treated, in some degree, of this kind of land, under the articles BOG and FEN; our further remarks will be more appropriate under PEAT, which see.

Moss-Rush. See RUSH.

MOTH, or *Phalæna*, a genus of insects consisting of sixteen hundred species. Their antennas gradually tapering from the base to the tip; tongue spiral; jawless; wings, when at rest, generally deflected. They fly abroad only in the evening and during the night, and feed on the nectar of flowers; the larva is active and quick in motion, mostly smooth, more or less cylindrical, and preys voraciously on the leaves of plants; the pupe is quiescent, more or less cylindrical, pointed at the tip at both ends, and generally enclosed in a pellicle. They have been divided into the following sections: *Bombyx, geometra, noctua, hyblœa, hepiatus, cossus, pyralis, tinea, allucita*, and *pterophorus.*

All the caterpillars of this tribe, after having several times cast their skins, *spin* for themselves the materials of a habitation, in which they become transformed into chrysalids. Out of this innumerable tribe we can only mention the following:

The most extraordinary of all is the *mori*, or Common silk-worm, a native of China, where it is found on the mulberry tree, its natural and only proper food. See MULBERRY and SILK-WORM.

The *atlas*, a native of both the Indies, belongs to the partition bombyx. The *luna*, of an elegant pale green, body covered with white wool, inhabits North America The *pavonia* is the most beautiful European insect of the bombyx kind, its wings, when extended, measure about six inches; many varieties; the larva gregarious, and green; verticilate, with red or yellow hairy protuberances; pupe blackish; occasionally found in our own country. The *sambucaria*, is an elegant moth of the geometra division; colour pale sulphur; found in June and July on the leaves of elder; the chrysalis black.

The *Vestianella*, or Cloth-moth, has cinereous wings with a white rib; it belongs to the tinea division, and is the common moth found in clothes and woollen furniture, and so destructive to them. The *sarcitella* belongs to the division tinea, has cinereous wings, thorax with a white dot on each side; found in skin-cloths, and woollen furniture; to which last it proves very destructive. The method for preventing their devastations is either by destroying the insects, or to render our clothes disagreeable food for them. The insects may be destroyed by oil, or the fumes of tobacco; and we are assured that a strong decoction of cayenne pepper, applied with a common painting brush, to the boxes, drawers, shelves, &c. where woollen goods or clothes are kept, will secure them from the ravages of this animal; it is said also, that fragments of Russia leather, or other skins, which emit and retain a strong anima odour, intermixed with woollen cloths and furs, will prevent their attacks.

The *pentadactyla*, with snowy wings and body, is a very beautiful European species, and a native also of our own country; the larva is sixteen footed, hairy, green with black dots, and a white dorsal line; pupe hairy, green, dotted with black; of the division pterophorus. The *hexadactyla* belongs also to the same division; found in England and Europe generally, on the honey-suckle; it is a most elegant and beautiful insect; appears before our windows, and flies in when they are open, in a still, warm evening in September.

MOTHER, the most important character of the female sex. To our mothers belong more immediately the care not only of rearing our children in the earliest stages of existence, but of fashioning their minds, of educing their capacities, and giving a bias more or less powerful to the man. The conduct of mothers towards their children, is, beyond all calculation, powerful, and with their precepts, when in accordance with that conduct, almost omnipotent. Hence, the great responsibility and duty of a mother; yet how few comparatively, feel, or are aware, that so much depends upon them in the formation of the human character. See EDUCATION, and MIND.

Mother's Marks. See NÆVI MATERNI.

Mother of pearl. See MUSCLE, and MYA.

MOTHER-WORT, LION'S TAIL, or *Leonurus*, a genus of plants comprising six species, chiefly natives of Siberia, one of our own country, one common to Java. They are as follow: the *cardiaca*, or Common mother-wort, with spear-shaped, three-lobed leaves; the *marrubiastrum*, with oval, spear-shaped, serrate leaves; the *crispus*, with leaves divided into three parts, and hairy cups; the *supinus*; the *tartarius*; and the *Siberius*. The first is a perennial plant, indigenous to England, as well as other parts of Europe. The other species are biennial, grow naturally in different parts of Europe, and are raised from seeds sown in the spring, upon a bed of common earth.

MOTIVE, in morals that which precedes and produces, or causes any act. As in the natural world, no effect takes place without a cause, so in the moral world, no action takes place without a motive. This law of the human mind is most consolatory: for although bad motives produce bad actions, yet good motives produce good actions. To produce a virtuous character, we must consequently withdraw the presence and operation of bad motives, and introduce the presence and operation of good motives, and virtuous actions will be the necessary result. Some of the most powerful motives of moral action are, personal example, and active and benevolent superintendence.

MOTMOT, or *momotus*, a genus of birds, consisting of one species only, the *brasiliensis*, or Brasilian motmot, of which there are two varieties. The one is ornamented with a bright green above, below more obscure; size that of a pie, about seventeen inches long. The other variety differs considerably in its colours. Both are distinguished from all other birds, by having the two middle feathers of the tail quite naked of their vanes, for about an inch, at a small distance from the extremity. Shy, and very difficult to be tamed; inhabit South America.

MOULD, a general name for the soft earthy substance that forms the upper stratum of land; and in which all kinds of vegetables strike root and thrive. See SOIL.

MOULD, MILDEW, or *Mucor*, a genus of fungi, arranged differently by different botanists. The species properly belonging to this genus are ten, amongst which the *mucedo*, or common grey mould, found on bread, fruits, plants, and other putrid substances, is well known; the stalks a quarter of an inch high, pellucid, hollow, and cylindrical; supporting each a single globular head, at first transparent, afterwards dark grey; which bursts with elastic force, and ejects small round seeds, discoverable by the microscope. The *sphærocephalus*, or Grey, round-headed mucor, grows upon rotten wood, and sometimes upon decayed plants and mosses. The *lichenoides*, or Little black, pin-headed mucor, grows in the chasms of the bark of old trees, and upon park-pales; stalks black. The *crisiphe*, and the *granulosus*: the first is sessile, white, with brown heads; the latter sessile, and blackish. See RUST and SMUT.

Mouldiness. See MOULD.

MOULTING, a periodical change of plumage in birds; it is also applied to denote that natural process by which horses, and other quadrupeds, cast their hair.

Moulting, in POULTRY, lasts, with its effects, from one to three months, according to the age and strength of the bird. Every succeeding year after the third, the hen continues to moult later in the season, and laying fewer or no eggs during the moulting period. Whilst under this natural process, poultry are unfit for the table, as well as for breeding. It is the same with respect to young poultry, whilst shedding their feathers in the spring. The regular moulting of full-grown fowls begins in the autumn.

About the latter end of September, or beginning of October, HORSES generally suffer a change in their constitution, attended with some degree of faintness, at the same time, a considerable change takes place in the thickness and length of their hair; and though they do not usually cast their coats at this season, as they do in spring, it is commonly called their moulting season. In the spring another moulting takes place; the winter coat is thrown off and exchanged for one that is shorter and smoother. At these periods, the horse requires particular care, and cannot bear exposure to rains, or cold winds; at such times they are also unfit for severe work, particularly during the autumnal, or October moulting; their work, therefore, should be moderate, and their strength supported by food of the best quality. If the horse appears to suffer much from fatigue after his labour, cordials will be useful.

MOUNTAIN, a considerable eminence of land, elevated above every thing adjoining to it, and commanding all the surrounding country: it is commonly full of inequalities, cavities more or less exposed, and strata half laid open. The term is also applied to a chain of mountains, thus we say, Mount Atlas, Mount Caucasus, &c.

Mountains are generally composed of primitive rocks, chiefly granite, appearing in irregular forms, and broken peaks. See GRANITE.

Those who have surveyed the earth in general, and studied nature on a grand scale, have constantly been struck with admiration, at the sight of such majestic eminences, which, extending different ways, seem to rule over the rest of the globe, and present to the beholder, a spectacle equally magnificent, interesting, and sublime. The following are the heights of some of the principal mountains in the world, above the level of the sea.

	Feet.
Ben Nevis in Scotland, the highest British mountain	4,370
Mount Ætna.	10,954
Pic d'Ossano (Pyrenees) . .	11,700
Pic of Teneriffe	14,026
Mont Blanc (Alps)	15,600
Chimboraço (Andes)	20,280
The highest peak of the Himalaya chain is above	25,000

See BAROMETER.

Mountain-ash. See ASH and PEAR-TREE.

MOUNTAIN-BLUE, a carbonate of copper, sometimes found native, at other times obtained by art; such is blue verditer. See COLOUR-MAKING.

MOUNTAIN-GREEN, a carbonate of copper, found native, at other times obtained by art; such is green verditer. See COLOUR-MAKING.

MOUNTAIN-WOOD, MOUNTAIN-CORK, MOUNTAIN-FLAX, and MOUNTAIN-LEATHER, are species of Asbestos, which is a soft, fibrous, flexible mineral, of a white or a greenish tint, composed of silica 60 parts, magnesia 30, lime 6, and alumina 4.

Mouse. See Rat.

Mouse (Dor). See Dormouse.

Mouse-ear. See Hawkweed.

Mouse, the shrew. See Shrew.

MOUSE-TAIL, or *Myosurus*, a genus consisting of one species only, a weed, with fibrous root, radical, linear-spikelets, rather obtuse leaves, and small, erect, yellowish-green flowers; found in our corn-fields.

MOUTH, in anatomy, a part of the face, comprehending the lips, teeth, gums, inside of the cheeks, tongue, palate, &c. See Gums, Teeth, Tongue, &c.

MOWING, the act of cutting down grass, &c. See Hay, and Husbandry.

MOXA, a soft languinous substance prepared in Japan, from the young leaves of China mugwort, by beating them when thoroughly dried, and rubbing them between the hands, till only the fine fibres are left. It is celebrated in the Eastern countries for preventing and curing many disorders, by being burnt on the skin. A little cone of it is laid upon the part, previously moistened, and set on fire on the top, which burns down with a temperate and glowing heat, and produces a dark-coloured spot, the ulceration of which is promoted by applying a little garlic. The ulcer is either healed when the escar separates, or kept running, according to circumstances.

Moxa has been also defined a cylinder of cloth, filled with fine lint and set fire to in the same manner as above described. See Poisons.

MUCILAGE, a peculiar secretion from certain organs of vegetables; the properties of which are insipidity, solubility in water, giving it a thick, clammy appearance and feel; insolubility in alcohol; not coagulable by a boiling heat, nor crystallizable; and, after the watery solution has been evaporated to dryness, again soluble in water, without having undergone any material change. Gum Arabic, and gum tragacanth, are inspissated mucilages. See Mucus.

MUCILAGE, in pharmacy, a solution of a thick and adhesive nature, resembling in appearance the solution of gum Arabic, &c.

The following mucilages are ordered by the London College:

Mucilage of gum Arabic. See Gum.

Mucilage of starch. Take of starch three drachms; water a pint; rub the starch, gradually adding the water, and boil it into a mucilage. It is given as a demulcent by the mouth. But it is more generally and advantageously used in the form of clyster, in diarrhœa, dysentery, and abrasions of the rectum. It is the common vehicle for administering opium in clysters.

MUCUS, or Animal mucilage, a fluid secreted by certain glands, and serving to lubricate many of the internal cavities of the body. It has little taste, dissolves readily in water, and forms an adhesive solution. It does not dissolve in alcohol or in ether. It is secreted in large quantities in the nose, œsophagus, stomach, intestines, &c. &c. Its principal constituent appears to be albumen.

MUD, the slime or miry earth usually found at the bottom of stagnant ponds, and stagnant waters. It affords a rich manure both for arable and pasture land. The term mud is also sometimes applied to the moist and pappy dirt of the streets of populous towns: this also is an excellent manure.

Mud fish. See Groundling.

Mud-Wall. See Building in Pisè.

MUGWORT, or *Artemisia*, a genus of plants consisting of more than seventy species, found in different parts of the globe. They may be subdivided into shrubs, or undershrubs; herbaceous with stems quite simple, and flowers racemed; herbaceous with stems more or less branched, flowers panicled, leaves compound; and more or less shruby, with branched stem and undivided leaves. The species chiefly deserving of notice are the following:

The *Abrotonum*, or Southerwood, a sweet smelling perennial shrub, a native of the south of Europe, and various parts of Asia, and well known in our gardens. It grows in any soil or situation, and may be propagated by cuttings planted at almost any season of the year. It is said to be tonic, diaphoretic, and anthelmintic, but is scarcely known in modern medicine. The dose of the leaves in substance, may be from one scruple to a drachm; of an infusion made with six drachms of the leaves, and ten fluidounces of water, a tea-cupful may be taken twice a day.

The *Absinthium*, or Common wormwood, is an indigenous perennial, growing in dry wastes, and flowering in August. The odour of the leaves is strong, and although fragrant, yet to many disagreeable. The leaves and flowing tops are the parts used medicinally. It is tonic, antispasmodic, and anthelmintic; and when externally applied in fomentation, it is discutient and antiseptic. It has been used with advantage in intermittents, gout, scurvy, and dropsy; the essential oil is said to be narcotic. The dose in substance is from one scruple to two, and of the infusion, made by macerating six drachms of the plant, in twelve fluidounces of water, one fluidounce to twelve fluidrachms, three or four times a day.

The *Santonica*, a native of Tartary and Persia, but cultivated in our gardens, produces the seeds commonly called worm seed, but which have sunk into disrepute, and indeed the plant itself is altogether of little importance.

The *Maritima*, or Sea wormwood, is a well-known plant, growing on our sea coasts, and in salt marshes; a conserve was formerly made with its leaves, but it is now totally neglected.

The *Vulgaris*, or Common mugwort, was formerly in the materia medica, but is now forgotten.

The *Chinensis*, or China mugwort, affords the article called moxa. See MOXA.

The *Pontica*, or Euxine wormwood; and the *rupestrus*, are all we can enumerate.

MULBERRY, or *Morus*, in botany, a genus comprehending seven species, as follow: The *Nigra*, or Common mulberry, a native of Italy; the *Alba*, or White mulberry, a native of China; the *papyrifera*, or Paper mulberry, a native of Japan; the *rubra*, or Red mulberry, a native of Virginia; the *Indica*, or Indian mulberry, a native of the East Indies; the *tinctoria*, Dyer's mulberry, or Fustic, a native of America, see FUSTIC; and the *Tatarica*, or Tartarian mulberry, a native of Siberia and Russia. Of these, three only are cultivated in our gardens, the white, black, and the paper mulberry.

The white mulberry is commonly planted in the south of Europe for its leaves, as food for the silk worms; yet the Persians use the common black mulberry, conjointly with the white, for this purpose. The trees which are designed to feed silk worms, should never be suffered to grow tall, but rather be kept in a hedge-form; and their leaves instead of being pulled off singly, should be sheared off together with their young branches. This sort of mulberry may be propagated by seeds or layers; the best mode is from seeds procured from the south of France or Italy. They should be sown in this country on a moderate hot bed, arched over with hoops, and covered with mats, about the middle of March, and covered over with light earth about a quarter of an inch deep. In very dry weather, the bed should be frequently watered, and in the heat of the day, shaded with mats; it should be also covered in cold nights.

The black mulberry is common in most gardens, being planted for its fruit. It may be propagated by sowing the seeds, or by laying down the tender branches, or by cuttings, which in two years will take root, and may then be transplanted to the place where they are to remain. The plants from seeds are, however, the best; but then there is a great hazard of their being fruitful: for it often happens, that those plants are for the most part of the male kind, which produce catkins, but seldom much fruit. This tree delights in a light soil, neither too wet nor over dry; and the soil under the tree should be every year well dug and manured.

The paper mulberry, with palmate leaves, and bristly fruit, may be propagated by laying down the branches, and planting the cuttings in the manner directed for the black mulberry. The bark is used for paper by the Japanese, whence its name. The leaves, however, of both these and the Tartarian mulberry, are used as food for the silk worm the former in France, the latter in China. This species thrives best in a sandy soil, grows quicker than the black, and is not injured by cold. A beautiful vegetable silk may be obtained from the bark and young branches of this tree, whilst it is in the sap, by beating and steeping. And it is said the women of Louisiana obtain a similar material from the shoots which arise from the stock, with which fringes, &c. are made; and the finest cloth among the inhabitants of Otaheite and the South Sea Islands is made from the bark of this tree. See SILK-WORM.

Mulberries are a cooling laxative; and when not too ripe, allay thirst, and are grateful in febrile diseases. They are seldom, however, used medicinally. When eaten too freely, as food, they are apt to occasion diarrhœa. A *Syrup* of *mulberries* is ordered by the London College to be made thus: Take of mulberry-juice strained, a pint; of refined sugar two pounds. Dissolve the sugar in the heat of a water bath, and take off the scum, if any arise. It is of the same nature as syrup of lemons.

MULE, a hybrid or mixt breed from two distinct species of the same genus; it is particularly applied to the production of a male ass and a mare; from a stallion and an ass it is called a hinny.

It has been generally supposed that mules and other hybrid animals never propagate; and there can be no doubt that the power of procreation in the hybrid race is very slender and limited, but even mules and hinnies have been occasionally found to propagate in warm climates, and other hybrids in climates of all kinds.

Mules are chiefly used in countries where there are rocky and stony ways, as about the Alps and Pyrenees. Great numbers are kept in these places; they are usually black, strong, well limbed and large; mostly bred out of Spanish mares: they are sometimes fifteen or sixteen hands high. They are sure footed; and no creatures are so proper for large burdens. Indeed, they are reported to be much stronger for draught than our horses, and that they will travel for months together with six or eight hundred weight upon their backs. It is somewhat remarkable that such useful animals have not been employed in this country. It is said that they kick and are stubborn with us, but this arises from our manner of rearing them, as they are not so in the countries where they are bred with more care.

Mule plants, as well as animals, it is now found, are not always sterile: almost all the plants of the Linnean classes xxi. xxii. and xxiii. generate prolific hybrids.

Mule-Pink. See PINK.

MULLEIN, or *Verbascum*, in botany, a genus, comprehending nineteen species, natives almost entirely of Europe; six found wild on the road sides, banks, and on the wastes of our own country. The following are cultivated: the *boerhavii*, or annual;—the *blattaria*, or moth;—the *thapsus*, or great;—the *phlomoides*, or woolly;—the *lichnitis*, or white;—the *sinuatum*, or scallop-leaved;—the *ferrugineum*, or rusty;—the *phœnicium*, or purple;—the *myconi*, or borage leaved;—and the *nigrum*, or black mullein.

The *Thapsus*, or Great mullein, is a biennial large plant, growing sometimes to the height of five or six feet; the leaves are whitish and woolly; the flowers are yellow. It was formerly used medicinally as an astringent, but is unknown in the present medical practice. As an ornamental plant it is, however, worth cultivating. The black mullein is perennial and justly admired for its beauty; it has yellow blossoms tipped with purple.

Mullers-grass. See OLIVINE.

MULLET, or *Mugil*, a genus of fishes, consisting of five species, having membranaceous lips; toothless; above the angle of the mouth a hard callus; gill membrane, with seven curved rays; the covers smooth, rounded; body whitish. The *cephalus*, or Common mullet, inhabits the European seas; enters rivers; back dusky, with blue and green; sides silvery, with broad, dusky, parallel lines reaching from the head to the tail; belly silvery; scales arranged in parallel rows; tail deeply forked. Found all round the shores of Great Britain, where they leave the sand marked with round holes, the traces of their digging: for they keep constantly piercing among the mud, most probably for food, on which, or sea weeds they live, for they never devour any fish. When surrounded by a net the whole shoal frequently leap over it. Flesh good; its taste, however, depending on the ground where it is fed. It abounds in the Mediterranean. The milts and roes form the botargo of the Italians. They are taken out entire, covered with salt for a few hours, afterwards pressed between two boards, dried in the sun for a fortnight, and are then fit for use. This article is, it is said, calculated to brace a weak stomach, and to give an exquisite relish to wine.

The remainder of the species are the *albula*, a native of America;—the *crenilabis*, or Crenated mullet, a foot long, inhabiting the Red sea: four varieties;—the *chilensis*;—the *chanos*, inhabiting the Red sea, is more than a yard long: another variety still longer.

MUM, a kind of malt liquor, much drunk in Germany, and chiefly brought from Brunswick. It is made thus: take 63 gallons of water that has been boiled till one-third part is consumed; brew it with seven bushels of wheaten malt, one bushel of oatmeal, and one bushel of ground beans. When it is tunned, the cask must not be filled too full at first: as soon as it begins to work, put into it three pounds of the inner rind of fir, one pound of the tops of fir and beech, three handfuls of carduus benedictus, a handful or two of rosa solis; add burnet, betony, marjorum, avens, pennyroyal and wild thyme, of each a handful and a half; of elder flowers two handfuls or more; cardamom seeds bruised, thirty ounces; barberries bruised, one ounce. The liquor should not, if possible, be suffered to work over. Lastly, when it is stopped, put in ten new laid unbroken eggs; use it at two years end. The English brewers, instead of the inner rind of the fir, use cardamoms, ginger, sassafras, elecampane, madder, and red sanders.

MUMPS, or *Cynanche parotidæa*, is a disease, said by some medical writers to be both epidemic and contagious, but Dr. Willan is of opinion that when he wrote, (1799), it had not been so for the last twenty years. Indeed, the circle of contagion and of contagious diseases, with the increasing good sense of the age, is manifestly reducing in size.

This complaint comes on with the usual symptoms of fever, attended soon after with a considerable swelling of the external fauces and neck. It first appears a moveable tumour at the corner of the lower jaw, but it soon becomes uniformly diffused over a great part of the neck, sometimes on one side only, but more commonly on both. The swelling continues to increase till the fourth day, but from that period it declines, and in a few days goes off entirely. As the swelling goes off, it not unfrequently happens that, in females, the breasts, and in males the testes become tumefied; these tumefactions, though large, hard, and somewhat painful, are seldom very urgent, or of long continuance.

This disease in general runs its course without either dangerous or troublesome symptoms; but is, nevertheless, one which should not be wholly unattended to; as it sometimes puts on a malignant appearance, and occasionally, though rarely, proves fatal.

A cooling regimen and spare diet are all that will be necessary in the first stages of the disease; taking care also that the bowels are moderately relaxed. The liniment of ammonia, see **Liniment**, may be applied exteriorly upon flannel to the part. Warm fomentations may also be of service. If, however, the disease put on the appearance of danger, a medical practitioner should, by all means, be consulted.

MUNDIC, a name given to some ores of copper: it is a copper pyrites, composed chiefly of sulphur and copper; mundic is of various colours, light yellow, greenish yellow, variegated with blue, green, or red. It is found in the tin mines of Cornwall, in Ireland, Siberia, Hungary, and Sweden.

An ore of arsenic is also called white mundic, or marcasite.

MURDER, the act of killing another with violence and injustice. The crime of wilful murder is punished with death in this country, and also in many other nations. See HOMICIDE and MANSLAUGHTER.

MURIATE, in chemistry, a combination of the muriatic acid with some base. Thus, muriate of soda, or common salt, is a combination of the muriatic acid and soda; muriate of tin, a combination of the muriatic acid with tin. See the next article, and also BARYTES, CALOMEL, &c. &c.

MURIATIC ACID, or SPIRIT OF SALT, an acid obtained from common salt, or muriate of soda, by means of distillation with sulphuric acid. The most economical proportions for obtaining it, are 32 parts of salt, 22 of sulphuric acid, diluted with one-third its weight of water. The retort containing these ingredients may be luted on to a receiver containing twice the quantity of water used in diluting the sulphuric acid, and the distillation carried on in a sand-bath. It is prepared in the large way in stone-ware earthen vessels of a peculiar construction.

When this liquid acid is pure it is perfectly colourless, but it generally has a yellow hue, arising from a little iron. It gives out, at all temperatures, a considerable quantity of a fuming, suffocating gas, of a peculiar smell.

When equal volumes of hydrogen and chlorine are mixed and exposed to light, they combine and produce a sour compound, commonly called *muriatic acid gas*; this gas is greedily absorbed by water, which takes up 480 times its bulk, and has its specific gravity increased from 1, to 1,210; thus, dissolved in water, it forms the liquid muriatic acid, or spirit of salt, as above described. See CHLORINE.

This acid combines with the earths, alkaline salts, and the metals, and forms bodies of more or less importance. With ammonia it forms sal ammoniac; see SAL AMMONIAC, with soda it forms common salt; see SALT; with lime it forms muriate of lime; see LIME and FREEZING MIXTURES; with iron a muriate of iron, see IRON; with quicksilver it combines in two very different proportions; in one it produces calomel, see CALOMEL; in the other corrosive sublimate, see CORROSIVE SUBLIMATE. With tin it forms a very useful article in dyeing; see DYEING and TIN; with barytes it forms a powerful medicine and useful test, see BARYTES; combined with antimony it forms the caustic commonly called butter of antimony, see BUTTER OF ANTIMONY. It is also used for various purposes in the arts.

As a medicine this acid is tonic and antiseptic. It has been efficaciously used in typhus fevers, and some cutaneous eruptions. It is a common and useful addition to gargles, in the proportion of from half a fluidrachm to two fluidrachms, in six fluidounces of any proper fluid in ulcerated sore throats, and in cankers of the mouth. In a very highly diluted state, viz. eight drops in four fluidounces of water, it has been recommended as an injection in gonorrhœa. It has even been regarded as a general antidote in syphilitic affections; but this notion is erroneous: it may be however useful to invigorate the general tone of the stomach. In such cases the dose is from ten to twenty drops in a sufficient quantity of water.

It is generally admitted to be useful as a fumigation for rooms and other places where contagion is supposed to be present. See CONTAGION.

For the mode of treatment when this acid has been taken by mistake, or as a poison, see AQUA FORTIS.

MURRAIN, a contagious disease, incident to cattle. It is known by the animals hanging down their heads, which are swollen, by short and hot breathing; palpitation of the heart; staggering; a secretion of viscid matter from the eyes; rattling in the throat, and a shining tongue.

No effectual remedy has ever been discovered for the prevention of this disease, except the separation of the healthy from the sick animals. It generally occurs in dry seasons, and very often suddenly proves fatal. Bleeding and purging have been recommended in the commencement of the disorder, with setons in the dewlap. After the operation of the purgative, opiates and aromatics are, it is said, the most proper remedies. It is fortunate, however, for this country, that we are not often visited with such a disease.

MUSCLE, in anatomy, a fleshy fibrous part of the body, which, by its contraction and relaxation, produces various motions.

The muscles of the human body are very numerous, and have various names, derived from their offices, their shapes, their situations, or their uses, &c. Those which extend any part are called *extensor* muscles; those which contract any part are called *flexor* muscles

Some muscles are under the control of the mind; these are called *voluntary* muscles; others are not subject to the control of the mind, these are called *involuntary*. The muscles of the limbs, and many others on the exterior part of the body are of the first class; the heart and various other viscera are some of the second class. The muscles of respiration partake of the nature of both kinds.

A muscle is composed of a great number of thin parallel plates, each of which is divided into smaller fleshy threads, or fibres, and inclosed in its proper cellular membrane. A muscle is divided into a head, belly, and tail; the first and third are firmly attached to the bones; their ends, which are white, are called *tendons*. See Tendon. The belly adheres loosely to the other parts by means of the cellular membrane, which swells when the muscle acts. All the muscles act by increasing the size of their bellies, in consequence of which they are shortened.

The action of a muscle can only be continued for a certain space of time; and notwithstanding all our endeavours to the contrary, it becomes relaxed, and remains a certain time in that relaxed state before it can again be thrown into action. Each irritable part has a certain portion of the principle of irritability which is natural to it, part of which it loses during action, or the application of stimuli. By a process wholly unknown to us, it regains this lost quantity during its repose or rest. See Flesh, Galvanism and Irritability.

MUSCLE, Mussel, or *Mytilus*, a genus of bivalve shell fish, comprehending sixty-four species, scattered through the seas of the globe; eleven common to the coasts of our own country. They may be thus sub-divided:

Parasitical, affixed, as though by claws; three species, of which the *crista galli*, with a plaited spinous shell, and rough lips, is an example. This inhabits the Indian Ocean and Red Sea, affixed to gorgonia; colour of the shell purple violet, pale cinnamon or bay; rough, with raised dots; triangular: four varieties.

Flat, or compressed into a flattened form; two species, of which the *margaritiferus*, or Pearl muscle, is an example. It inhabits the American and Indian seas; about eight inches long, and something broader; the inside is beautifully polished and produces the true mother of pearl, and frequently most valuable pearls; the outside sometimes sea green, or chesnut, or bloom colour with white rays.

Ventricose, or convex, including all the rest: the following are examples: the *edulis*, or Edible muscle, shell smoothish, violet; shape nearly triangular. Inhabits the British, European, and Indian seas; generally two or three inches long, but much larger within the tropics; found in large beds, and generally adhering to other bodies by means of a long silky beard. It is said to be a rich food; but often extremely noxious to many constitutions. For the treatment of persons who are affected by eating these animals, see POISON.

The *anatinus*, or Duck muscle, inhabits the fresh waters of Great Britain and other parts of Europe; about five inches long and two and a quarter broad. Ducks and crows are fond of this, as well as the *cygneus*, a broader species, found in rivers and ponds. These are sometimes called horse muscles; they are considered unwholesome food.

The muscle in all its species is said to be androgynous: that is, each individual progagates its species without intercourse with any other individual; they lay their eggs on the outside of their shells to the amount of many thousands.

MUSHROOM, or *Agaricus*, a genus of fungi, distinguished by gills underneath. It is one of the most extensive in botany: upwards of three hundred species have been enumerated. Two hundred and eighty two are natives of this country. They may be divided into those surrounded with a ring and curtain;—a stem with a curtain without a ring;—a stem ranged or annulate without wrapper;—a stem without ring or wrapper;—a cap, funnel form, or oblique;—a cap halved, stem lateral;—smooth, membranous, or fleshy, cap and gills coriaceous;—smooth, tender, mostly pellucid; with cap striate and plaited, generally of a uniform colour;—tender, more or less transparent, partly dissolving into a black fluid, or furnished with black gills;—cap opaque, conic; gills sooty when old, and dissolving into a black sanies, stem hollow.

Many of the tribe are highly poisonous; most of them are more or less so.

The *Campestris*, Champignon, or Common mushroom, found in woods, old pastures, and at the side of roads, where it attains to perfection in the month of September; and the *oreades*, or *pratensis*, or meadow mushroom, by some also called champignon, very frequent on heaths and pastures, are those which are most usually eaten as food.

Mushrooms are raised artificially thus: when no young plants can be procured from the fields or gardens, their roots, spawn, or embryons may be generated from horse dung, laid unbroken in small heaps under cover. In a few weeks, during the summer months, fibrous roots will appear, resembling white threads, which on separating the heaps, emit the smell of mushrooms. The dung is then to be carefully piled up about three inches thick on a hot bed of a moderate heat, and formed of alternate strata of horse dung and tanners' waste; the uppermost layer being composed wholly of tan to the thickness of two inches. The bed is next to be covered with a little manure, and to be raised about three inches with good soil, when it is finally overspread with a thick stratum or coat of straw. The most proper place for the formation of mushroom beds, is in the shed usually erected behind hot-houses: for these plants vegetate without light, warmth only being requisite, provided they be occasionally watered.

The characteristics of a good mushroom are hardness and solidity, a little brownish on the top; and when young it has a thickish white skin covering the gills; the gills are for the most part of a pink or flesh colour; the stalk is also large in proportion to the size of the cap. There is also a peculiar smell in a good mushroom, with which those who are acquainted with them cannot be deceived.

Mushrooms appear to possess some properties which indicate that they are allied to the animal kingdom, but those which are edible are, nevertheless, such an indifferent food, and others of the same genus which are poisonous, are so liable to be mistaken for them by the uninformed, that the best advice which we can give to our readers is not to eat them at all.

The mushrooms which grow in the shade of thick forests are in general bad; their surface is moist, more or less dirty, and have a disagreeable appearance. Those which are heavy with a moist surface and nauseous smell, and which on being cut present different colours, changing from time to time, and found in shady places, are to be rejected; the same may be said of those which grow quickly and decay immediately, those bitten and abandoned by insects, and those with a soft stalk and covered with patches of skin. The following method will, it is said, determine the quality of mushrooms: take an onion, strip off the outer skin and boil it with your mushrooms. If the onion become black or blue there are certainly dangerous ones amongst them; if it remain white they are good. We do not, however, advise our readers to rely implicitly on this test.

Poisonous mushrooms act in a different manner according to the species to which they belong. The following may, however, be considered the most usual symptoms in those who are so unfortunate as to partake of them: nausea, excessive heat, and pain in the stomach and bowels, accompanied by purging and vomiting; these are succeeded by unquenchable thirst, convulsions and fainting fits; the pulse becomes small, hard, frequent; delirium ensues, and if relief be not afforded, great stupor, whence the individual is only roused by the violence of the convulsions. These symptoms having continued some time, cold sweats come on, and death closes the scene. In general, mushrooms do not manifest their action till five, seven, twelve, or even twenty-four hours after they have been eaten.

Experience proves that the most poisonous mushrooms left some time in vinegar, salt and water, or ether, lose their poisonous qualities, but these fluids having dissolved the active parts, ought to be regarded as poisonous. It follows that neither of these fluids should be given as long as any portion of the mushroom is supposed to remain in the stomach or bowels, as they will dissolve in the stomach the venomous parts and render the poison more terrible.

When symptoms of poisoning from mushrooms are complained of, give three grains of emetic tartar in a glass of water; fifteen minutes after, a second glass with one grain of emetic tartar, eight grains of ipecacuanha, and three drachms of sulphate of soda, and repeat it every twenty minutes till copious vomiting is produced. After these may be supposed to have discharged the contents of the stomach, we must endeavour to evacuate what has passed into the bowels. To effect this, give a dessert spoonful of the following mixture every half hour: two ounces of castor oil and three ounces of syrup shaken together. Then administer the following clyster: boil for fifteen minutes two ounces of cassia pods, a drachm of senna, and half an ounce of Epsom salts in a quart of water: strain. This must be repeated twice or thrice if copious evacuations are not obtained. If, notwithstanding these measures, the mushrooms be not evacuated and the disease continues, boil half an ounce of tobacco in a quart of water for fifteen minutes, and give the decoction as a clyster. This rarely fails to excite vomiting. After the poison is evacuated, give two spoonfuls of the following mixture from time to time: take of ether four fluidrachms; of syrup two fluidounces; of orange-flower water four fluidounces. If the disease continue with great pain of the stomach, give plenty of decoction of linseed, gum-water, or sugar and water, and apply cloths steeped in the decoction to the bowels, and if possible use the warm bath. If this be not sufficient, apply ten or twelve leeches to the most painful parts of the belly. If assistance be not given till after the stomach has become swelled and very painful, with great thirst and much fever, the irritating purgatives are not to be employed, but leeches to the belly, bleeding, fomentations and clysters of decoction of linseed must be had recourse to. In all such cases when it is possible, the best medical advice should be procured, because symptoms or appearances may arise for which it is not possible here to provide.

MUSIC, the science of combining sounds so as to be agreeable and pleasing to the ear. It implies also the sounds themselves so combined.

Musical sounds are at once so seductive and enchanting, and furnish withal such an agreeable recreation, that few persons are insensible to their influence;

and whilst music is made only a recreation, it is extremely desirable, and so far should be encouraged, but when instead of this it is converted into the business of life, it becomes mischievous and should be repressed: for the mere musician, whether male or female, who devotes his days, not to say his nights to it, too often neglects the excitation of those intellectual faculties which are of much more importance than any music whatever. Musicians are, it is true, said to be long lived; but those who pay so much attention to sound, are not often incumbered with a superabundance of sense. That music is unquestionably the best in which sense is combined with sound, as that of the human voice.

MUSK, or *Moschus*, in zoology, a genus of mammalian animals, consisting of six species, the greater number of which afford the article called *musk*, whence the generic name: a few, however, have not this property. The substance called musk is extracted from a bag situated near the umbilical region. The following are the species.

The *moschifer*, or Thibet musk. In form this animal resembles a small roebuck. It measures three feet three inches in length, and in height between two and three feet. Its upper jaw is considerably longer than the lower; tusks nearly two inches long, projecting, naked beyond the lower jaw; ears long, narrow; without deep brown, within yellow; hair of the body very long, erect, waved, at the root black, at the middle cinereous, at the tops ferruginous; jaws with six grinders each; hoofs black, long and divided; the inguinal bag contains musk, of which the whole animal smells; the musk is not to be obtained till it is dead. This species is a native of Asia, and is found between 44, or 45 and 60° north latitude, in Thibet, China, Tonquin, the Russian dominions in Asia, &c. It is naturally a mild and timid animal. Flesh tolerable food. Skin and hair useful.

The *Indicus*, or Indian musk, is an inhabitant of India, somewhat larger in size than the former, distinguished by slender legs, oblong erect ears, and the resemblance which its head bears to that of a horse.

The *Americanus*, Brasilian musk, or Wirrebocerra, is about the size of the European roe-buck; back, sides, chest, and thighs of a bright rust colour; belly white, eyes large, black; ears four, tail six inches long; legs slender, yet muscular; flesh delicate; does not afford musk.

The *Meminna* inhabits Java and Ceylon; form diminutive; not more than one foot five inches in length; ears large, open; tail short; sides and haunches variegated with spots and transverse bars of white, on a cinereous olive ground; the rest of the upper part of the body cinereous olive, without spots, throat, breast, belly, white.

The *Javanicus*, or Java musk, size of a rabbit; legs very slender; snout and ears bare; tufts on its knees; under the throat two long divergent hairs; neck hoary, mixed with yellow; body ferruginous; neck and belly white; the neck variegated with two dusky spots; tail of a moderate length, terminating in a white tuft; a native of Java.

The *Pygmæus*, or Guinea musk, notwithstanding its name, inhabits India, and the Oriental islands rather than Guinea; nine inches and a half long; two small tusks in the upper jaw; ears large; tail one inch long; belly white, the rest of the body tawny; they vary, however, in colour. They are caught among the Malays in great numbers, carried to market in cages, and sold at a very moderate price.

Two sorts of musk are known in commerce; one is enclosed in hairy bags, as it is supposed to be obtained from the animal; the other is a loose, dark, coarse, granulous powder, commonly called *musk in grain*. This last sort is very commonly adulterated, and no means with which we are acquainted will enable us to detect the fraud: the weakness of its smell is a suspicious circumstance. The best musk is brought from China, an inferior kind from Bengal, and a still worse sort from Russia. Its qualities as a perfume are well known.

As a medicine musk is esteemed stimulant and antispasmodic. It raises the pulse without much augmenting the heat of the body: and has, it is said, a remarkable power of resolving spasm, and increasing the energy of the brain and nerves. It is also beneficial in the retrocedent gout. Combined with calomel it has been of service in epilepsy; and it checks the vomiting and pain in the bowels in cholera morbus. It is also said to be beneficial in deafness, when introduced into the ear with cotton. It should be taken in large doses to be effectual, and is best given in the form of bolus. The dose is from six grains to one drachm, repeated at intervals of six or eight hours.

A *Musk mixture* is ordered by the London College thus: Take of musk, gum Arabic in powder, refined sugar, of each a drachm; rose water six fluidounces. Rub the musk with the sugar, then with the gum, and add gradually the rose-water.

The dose of this mixture is from half a fluidounce to two fluidounces every three or four hours in spasmodic affections, and the sinking state of typhus.

In regard to the medical virtues of musk generally, we cannot avoid suspecting that they depend chiefly upon the ammonia with which it appears to abound.

An *Artificial musk* may be made by digesting half a fluidounce of nitric acid for ten days upon one ounce of fetid animal oil obtained by distillation; to this is then to be added one pint of rectified spirit of wine, and the whole is then to be left to digest for one month.

Or drop three fluidrachms and a half of nitric acid upon one fluidrachm of rectified oil of amber; after standing twenty-four hours a black resinous pellicle, exhaling the odour of musk, will be formed.

Musk-cavy. See RAT.

Musk-Ox. See OX.

MUSLIN, a fine kind of cotton cloth, formerly imported from the East Indies, some kinds of which are still brought from that distant region, but latterly, such has been the improved state of our own manufacture that muslins of almost every kind and quality are made in the united kingdom at exceedingly low prices.

Musquito. See GNAT.

MUSTARD, or *Sinapis*, a genus of plants comprehending nineteen species, for the most part scattered over the warmer climates of the globe: the three following common to our hedges and fields.

The *Arvensis*, charlock, or corn-cale, with siliques many angled, turgid at the seeds; leaves ovate, somewhat lyrate; found wild in our corn fields; the seeds are, it is said, employed in the manufacture of Durham mustard.

The *Alba*, or White mustard, is well known; it is found wild in our cultivated fields, and is also cultivated in our gardens as a salad, to be eaten with cresses and radishes, for which purpose it is very stimulant and wholesome.

The *Nigra*, or Black mustard, is found wild in our hedges. The flowers of all the species, which appear in May and June, are yellow. The seeds of the last afford the common mustard at our tables; which, used moderately, is a wholesome condiment.

As a *Medicine* mustard seeds are stimulant, emetic, diuretic, and rubefacient. Swallowed whole they have been found useful in dyspepsia, chlorosis, and the torpid state of the intestines which accompanies paralysis. A large tea-spoonful of the bruised seeds, or the powder, mixed with water, forms an excellent emetic in paralytic, epileptic, and some apoplectic cases, often operating quickly, when other emetics fail.

In dropsy a whey may be made by boiling a table-spoonful of the bruised seeds in a pint of milk, and straining; of which a fourth part may be taken three times a day.

A *Mustard cataplasm*, made by mixing equal parts of flour mustard, and linseed meal with a sufficient quantity of hot vinegar to make a cataplasm, is frequently employed as an external remedy in paralysis; and is also applied to the soles of the feet in the delirium of typhus, and in comatose diseases. It produces a redness of the parts, and sometimes blisters.

The chief medical qualities of mustard appear to reside in a very acrid volatile oil, and an ammoniacal salt.

Fine flour of mustard, as it occurs in commerce, is sold of many different qualities; it is, in general, most nefariously adulterated; perhaps that usually found in the shops does not contain more than one-sixth of genuine mustard; the rest is common flour tinged with some colouring ingredient, such as Dutch pink, and made pungent by the addition of capsicum. Those who desire to have genuine mustard, must themselves prepare it from the seeds.

Mustard, the essence of. See QUACK MEDICINES.

MUSTARD, the Hedge, or *Erysimum*, a genus of plants comprising fourteen species, all European plants, many of them indigenous to our own country; the chief are the *alliaria*, or Jack-in-the-hedge, with heart-shaped, acute-toothed leaves, found in our hedges; the *barbarea*, or Winter cresses, formerly in the dispensatories; and the *officinalis*, Common hedge mustard, or medicinal eryngo, the seeds of which are warm and pungent, and very similar to mustard in their effects.

MUTTON, the flesh of sheep after they are killed. Mutton is, next to beef, one of the most nutricious kinds of animal food; and such food roasted is to be preferred to that which is boiled. The fat, however, of this as well as all other animal food, for dyspeptic stomachs, must be carefully avoided. The flesh of lamb is by no means so valuable. See ALIMENT.

Mutton suet is of a similar nature to other animal fats. It melts at 127° of Fahrenheit. It is used in medicine chiefly for giving a consistence to ointments. It is sometimes, however, boiled in milk, in the proportion of two ounces of suet to a pint of milk; a cupful of this mixture is given occasionally in obstinate diarrhœa, when there is considerable acrimony of the contents of the bowels.

Mutton broth, although wholesome and nutricious, is by no means so powerful a medicament as beef-tea. It forms a very useful medium for the exhibition of many active medicines in clysters; and is itself, indeed, an excellent clyster in ulceration or abrasion of the rectum; and also in that state of the bowels of infants which occasions green motions, &c.

MYA, or GAPER, a genus of bivalve shell-fish, consisting of twenty six species, characterised by generally gaping at one end. They are scattered through the seas and rivers of the globe; six common to our own coasts. They perforate the sand and clay at the bottom of the sea, or beds of rivers, burying themselves or their shells wholly or in part. The following are the chief: The *declivis*, with a brittle semi-transparent shell, found about the Hebrides; in great esteem as food among the inhabitants.—The *pictorum*, or Painter's mya, has an ovate shell; six or seven varieties; found in Britain, other parts of Europe, Barbary, and Tranquebar; one inch and three-quarters long, three and a half broad; shell frequently used by painters for their colours, whence its name.—The *margaritifera*, or Pearl mya, is ovate; inhabits most of the Arctic circle. It is celebrated for producing large quantities of mother of pearl, and pearl; the latter being a disease of the fish analogous to the stone in the human body. The river Conway, in Wales, was formerly famous for producing pearls of great size and value. This fish is supposed to attain the age of fifty or sixty years, and that it may be made to produce pearls at our pleasure.

MYOLOGY, in anatomy, the description and doctrine of the muscles.

Myopia. See SIGHT.

MYROBALANS, or *Myrobalanus*, a dried fruit of the plum kind, brought from the East Indies. Several different sorts have been distinguished in the shops. They have all an unpleasant, bitterish, austere taste, and give an inky stain with solutions of sulphate of iron. They are, we believe, used occasionally by the dyers, but have long been expunged from the materia medica.

MYROXYLON, in botany, a genus consisting of three species, all natives of South America, of which the *Peruiferum*, or Balsam of Peru tree, is the chief. See BALSAM.

MYRRH, or *Myrrha*, a gum resin, obtained from a tree or plant which grows on the eastern coast of Arabia Felix and Abyssinia, but of what kind is not at present known. Two kinds of myrrh are met with in the shops, one of a dark colour and in large lumps or drops, called India myrrh, and generally esteemed of an inferior quality; and another in smaller pieces or tears of a brighter colour, and a more fragrant smell, called Turkey myrrh: this last is, on every account to be preferred.

Myrrh is partially soluble in water, alcohol, and ether. It is tonic, emmenagogue, and expectorant. It is efficaciously given in cases of debility, such as chlorosis, in which it is advantageously combined with aloes, the barks or other bitters, and chalybeates; it is said also to be useful in pulmonary consumption, where there is an ulceration of the lungs without much hectic, and where the patient's strength is considerably reduced by the expectorated matter; in such case it is combined with nitre, digitalis, opium, camphor, or sulphate of iron. It is also given in several other diseases; but we think its virtues have been rated too highly. It is best to be given in substance. The dose is from ten grains to one drachm. Myrrh is an ingredient in various preparations, the following are the chief:

Tincture of myrrh: take of myrrh bruised, four ounces; rectified spirit of wine, two pints; water a pint. Macerate for fourteen days, and filter. This is a useful application to spongy gums, and in combination with acids for gargles.

Compound tincture of myrrh: take of myrrh bruised, four ounces; of aloes bruised, two ounces; of proof spirit, three pints. Digest for fourteen days, and strain.

This is a very common application in many families to green wounds. It is also in frequent use with farriers. Perhaps the compound tincture of benjamin is superior to it upon all occasions, except its application to old ulcers.

For other compositions with myrrh, see GALBANUM and IRON.

MYRTLE, or *Myrtus*, a genus of plants, comprehending twenty-eight species, often, however, made more numerous by the introduction of plants which belong to other genera. These are uniformly natives of warm climates, and for the most part indigenous to India, South America, the West Indies, or the Cape. The three following are most deserving of notice:

The *Communis*, or Common myrtle, is a native of Asia, Africa, and the South of Europe, and the parent of all the common varieties found in our gardens and green houses; of these varieties the chief are: the Common broad-leaved, or Roman myrtle;—the Box leaved myrtle;—the Common Italian, or upright myrtle, of which the nutmeg myrtle is a sub-variety;—the Orange, or bay-leaved myrtle;—the Portugal myrtle;—the broad-leaved Dutch myrtle;—the Double flowering myrtle, and the Rosemary, or Thyme-leaved myrtle. All these varieties are constant; but there are others far less marked and more fugitive; such are the gold-striped, the silver-striped myrtle, &c. &c.

They are all easily propagated from cuttings. The best season for which is July, and the straightest, youngest, and most vigorous shoots are to be chosen for the purpose. These should be cut off about eight inches long, and the leaves of the lower part stripped off two inches high, and that part of the stalk twisted which is to be placed in the ground; they should be planted in pots of rich light earth, closing the earth well about them and be gently watered; then removed into a moderate hot-bed, and shaded and watered once in two or three days till they have taken root. They should be gradually inured to the open air, and in August they may be removed into it, where they may stand in a warm sheltered situation till October, when they should be removed into the green-house.

The *Pimenta*, or Pimento myrtle, is a native of New Spain and of the West Indies; its flowers appear in June, July, and August, which, with every part of the tree, breathe an aromatic fragrance. It is a beautiful evergreen, rising sometimes fifty feet in height. The dried berries are the allspice of the shops. See ALLSPICE.

The *Caryophyllata*, or Clove myrtle, is a native of Ceylon. The bark of this species resembles cloves both in smell and taste.

Myrtle, the Candle berry. See CANDLE BERRY MYRTLE.

———— *Dutch.* See CANDLE BERRY MYRTLE.

MYSTERY, something either beyond human intelligence, or something obscure, supposed to be understood by some persons, or some classes of mankind, but which others either are not supposed capable of comprehending, or not permitted to comprehend. Mystery is the chief engine by which mankind have been imposed upon and deceived by the crafty and designing in all ages and in all countries. Wherever there is mystery in human affairs, there we may always suspect fraud: truth needs no disguise.

N.

NACRE, or *Pinna*, a genus of bivalve shell-fish, consisting of eighteen species, scattered through the seas of the globe; the inhabitants of these shells produce a large quantity of fine strong byssus, which, by the Italians, is woven into a sort of silk. The shells are generally found standing erect in the smoother waters of bays, with the larger end a little open; they are accounted by many a rich food. One, the *muricata*, with a striate shell, and concave, ovate, acute scales, is found on our own coast; it is from three to nine inches long, and from one to three broad; thin, brittle, pellucid, horny; the outside with longitudinal ribs, rough, with rows of small prickles.

NÆVI MATERNI, or MOTHER'S MARKS, the marks which are upon the skin of children at birth; and have been commonly, but erroneously, supposed to be caused by the longing or aversion of the mother during pregnancy. The causes, however, of such marks are, most probably, beyond the control or operation of the human mind. The laws of nature are, the anxious mother may rest perfectly satisfied, not so easily overturned; nor can the mere circumstance of some strong impression on her own mind communicated such marks to the body of her offspring. Most certain it is that a disturbance of the mental and bodily functions of the mother may affect the general health of the child, but not with such marks; and hence the necessity of all pregnant females being kept in as tranquil and agreeable a state of mind as possible.

NAILS, or *Ungues*, in anatomy, the horny substances which covers the fingers and the toes.

The nails consist principally of albumen. They are liable to be injured and split by various accidents; they should therefore be always kept moderately short, not only to guard against such accident, but also for decency and cleanliness. Whenever they are injured, the best remedy is, in general, to wrap them up in dry lint. Greasy ointments, and even poultices, are not often suitable applications to them. See WHITLOW.

NAILS, in building, &c. are small

spikes of iron, brass, &c. which being driven into wood, serve to bind several pieces together, or fasten something upon them. They are of various kinds, and derive their names either from their forms or their uses; thus there are rose-heads, clasp-heads, brads, trunk-nails, clout-nails, deck-nails, hob-nails, tintacks, &c. &c. They are made in general of wrought iron; but some are made of cast-iron, and some are cut out of sheet or other wrought iron; they are also made of brass and copper.

Nail wort. See Whitlow Grass.

NAIS, a genus of molluscous worms, consisting of ten species, three of them common to the stagnant waters or sandy sediments of our own country; the rest found on the shores of the North Seas. They are generally a few lines long, and attached to the stalks of aquatic plants. The largest, the *quadricuspidata*, is, however, two inches and a half long, inhabits Iceland; the body is composed of one hundred and four annular segments, either pale red, or reddish grey, with a longitudinal purplish line beneath.

NAPÆA, in botany, a genus of plants, consisting of two species, natives of Virginia, both hardy, herbaceous, flowering perennials, found frequently in the borders of our pleasure gardens.

NAPE, that part of the joint of the neck which is behind.

Naphtha. See Bitumen.

NARCISSUS, in botany, a genus of plants, comprehending twenty-three species, all European plants, and three or four natives of our own country. The following are those chiefly cultivated: the *pseudo-narcissus*, Common daffodil, or asphodel;—the *poeticus*, or White narcissus; — the *biflorus*, Two-leaved or pale daffodil;—the *bicolor*, or Two-coloured narcissus;—the *minor*, or Least daffodil;—the *triandrus*, Rush-leaved narcissus, or reflected daffodil; —the Oriental narcissus;—the *bulbocodium*, or Hoop-petticoat, the *tazetta*, or Polyanthus,—the *serotinus*, or Late-flowering,—the *odorus*, or Sweet-scented; and the *calathinus*, or Calthine, yellow narcissus;—the *jonquilla*, or Common jonquil.

The Daffodil grows wild in our woods and under our hedges. Common as it is, it is an elegant yellow flower, and deserving notice from its hardiness, early appearance, and easy culture, as a double flower, by simply parting the roots.

The *Narcissus poeticus* yields many varieties: purple-cupped flowers, yellow-cupped flowers, and double flowers, the petals in all being entire and white. It is the real narcissus of the Greek and Roman poets, and is deservedly extolled for its beauty and fragrance.

The Polyanthus daffodil yields numerous varieties. They are all beautiful flowers, whether in gardens, glasses of water, or ornamental pots.

Of the jonquil there are also many varieties, and from its delicacy of shape, softness of colour, and sweetness of scent, is one of the most agreeable of spring flowers.

Most of these may be propagated either by offsets or seeds. The offsets should be three years old, and planted in August. The method by seeds is, however, preferable, and is in general such as must be used for all the narcissus kinds. The seeds should be obtained from the country in which this plant naturally grows. They must be sown the first week in September, in boxes of a light rich earth, and set where they can have free air and the rising sun. In winter the boxes must be removed to a southern aspect, and towards April taken back to their first place again. They must be occasionally watered. The third year they must be separated from the earth, and planted out in the month of August a foot apart, in a place sheltered from wind, where they will flower. They should not be taken up till the fourth year.

NARCOTICS, those medicines which have the power of procuring sleep or stupefaction. Hemlock, henbane, opium, &c. are narcotics. See Morphia.

NARWHAL, or *Monodon*, a genus

of fish, consisting of one species, the *monoceros*. This animal is peculiarly distinguished from every other kind of whale, by its very long horn-like tooth, which is perfectly straight, of a white or yellowish white colour, spirally wreathed throughout its whole length, and gradually tapering to a sharp point. It measures from six to nine feet in length, and proceeds from a socket on one side of the upper jaw, having a large cavity at its base running through the greater part of its length. In young animals, and occasionally in full-grown ones, especially the males, there are two or three of these teeth sometimes nearly equal, and sometimes very unequal in length, seated close to each other at the base, and running nearly in parallel lines to their extremity.

The skin is smooth, and there is a considerable depth of oil or blubber beneath. It inhabits chiefly the northern parts of Davis's straits. It is taken by harpoons; the Greenlanders eat the flesh raw, boiled and dried as food: the intestines and oil are also used as food; the tendons make a good thread, and the teeth are used for building tents. Before this animal was distinctly known, the horns were supposed to be those of the imaginary unicorn. A specimen of this whale, measuring about eighteen feet long, exclusive of its horn, was some time since stranded on the coast of Lincolnshire, near Boston.

NATES, in anatomy, the fleshy parts on which we sit.

NATRON, a term applied in the London Pharmacopœia, published in 1788, to soda. It is now, however, almost universally called soda, a much more appropriate term. See KALI and SODA.

Natural History. See HISTORY OF NATURE.

NATURAL PHILOSOPHY, otherwise called PHYSICS, is that science which considers the powers of nature, the properties of natural bodies, and their actions upon one another. See CHEMISTRY, ELECTRICITY, GALVANISM, &c. &c.

NATURE, that diversified mass of natural bodies in the universe, whether animal, vegetable, or devoid of animation, cognizable by the senses, and subject to certain and determinate laws.

NAUSEA, an inclination to vomiting without its taking place; and also a disgust of food approaching to vomiting. Nausea is an attendant on various diseases.

NAVEL, *umbilicus*, in anatomy, the centre of the abdomen.

NAVEL-WORT, or *Cotyledon*, a genus of plants, comprehending twenty-four species, chiefly natives of the Cape, but two, the *umbilicus* and *lutea*, found wild on the moist rocks of our own country. The rest must be preserved in the green-house, where they rise to different heights, and have yellow or red flowers.

Navew. See CABBAGE and RAPE.

NAUTILUS, or *Argonauta*, a genus of univalve shell-fish, consisting of five species; the following is deserving of peculiar notice:

The *Argo*, or Nautilus, has the keel or ridge of the shell slightly toothed on each side. It inhabits the Mediterranean and Indian Ocean, and was supposed in former ages to have taught mankind the first use of sails. When it means to sail, it discharges a quantity of water, by which it was made heavier than the sea-water, and rising to the surface, erects its arms and throws out a membrane between them; by which contrivance it is driven forward like a vessel under sail, hanging two of its arms over the shell to serve as oars or a rudder.

NAUTILUS, or PEARLY NAUTILUS, a genus of univalve shell-fish, comprehending thirty-one species, often confounded with the genus *argonauta*. Many are found on our own coasts; some in the American and Indian Oceans. The following are the chief: the *pompilius*, with the aperture of the shell heart-shaped; inhabits the Indian and African Ocean, often very large, and finely variegated with brown flexuous streaks, spots, or marks; within a most beautiful pearly gloss. Used for drinking cups by the inhabitants of the East.' The *spicula*, inhabits America; about an inch in diameter. The *belemnita*, or Thunder stone; shell equal, smooth, conic, acute, varying in size from half an inch to eight inches; found in a fossil state: called thunder stone, from a silly notion that these shells are thunderbolts.

The great and striking character of this genus, as far as regards the shell, is the extraordinary structure of the internal part, which is formed into thirty or forty separate chambers or divisions, each communicating with the rest by a small tubular hole near the centre. The body, or chief part of the inhabiting animal, fills up the front or great concavity, and that only; while from its extremity proceeds a slender tail or process passing through all the rest of the chambers. It has been supposed that it has the power of filling up the chambers at pleasure, either with water or air, or of exhausting them of both in order to make itself lighter or heavier during its navigations, being thought capable of sailing, though in a less perfect manner than the genus mentioned above. From above the neck, or round the upper part of the head, rises a large concave flap or hood, by the elevation or expansion of which it is supposed to sail.

This animal is indistinctly allied, as well as the preceding genus, to the *sepia*, or cuttle-fish.

Nealing. See ANNEALING.

NEAR-SIDE, in horsemanship, the side on which you stand to mount; the left hand side.

•**NEAT'S-FOOT OIL**, a greasy kind of oil obtained from the feet of oxen and other cattle. It is supposed to be peculiarly well calculated for anointing harness and other leather.

NECK, or *Collum*, in anatomy, that part of the body which connects the head with the trunk. The bones of the neck are the seven cervical vertebræ. The external parts are, the common integuments, several muscles, eight pair of cervical nerves, the eight pair of nerves of the cerebrum, and the great intercortal nerve; the two carotid arteries, the two external jugular veins, and the two internal; the glands of the neck are the jugular, submaxilliary, cervical, and thyroid. The internal parts are the fauces, pharynx, œsophagus, larynx, and trachea.

The neck is liable to various diseases, one of which is the enlargement of the thyroid gland, termed Bronchocele, or Derbyshire neck. See BRONCHOCELE, and WEN.

Luxations of the neck are, in general, fatal: but a partial dislocation may be removed. Surgical assistance should at once be had.

NECROSIS, a term in surgery, applied to the mortification of a bone; it is also sometimes called dry gangrene.

Nectarine. See PEACH.

NECTARY, in botany, the melliferous part of a vegetable, peculiar to the flower. It is frequently in the form of a horn or spur; sometimes in that of a cup. Whence it has been named honey-cup.

Needle, the shepherd's. See CICELY.

NELUMBIUM, a genus of plants, consisting of four species, three common to North America, and one, the *speciosum*, indigenous to India. This last has been usually, though erroneously, regarded as a water-lily. The flowers are of a purple hue, and larger than the palm of the hand. The roots are horizontal, long, creeping, consisting of joints linked together, ovate-oblong, white, fleshy, and esculent. The Chinese have them not only served up in summer with ice, but laid up in salt and vinegar for winter. The seeds are about the size and form of an acorn, and more delicate than almonds. The ponds in China are generally covered with this plant, and exhibit a very beautiful appearance when it is in flower; nor are the flowers less fragrant than handsome. In this country it is best cultivated in troughs or cisterns, having earth at their bottoms, in which situation it produces excellent flowers. In its native soil, it is propagated either by roots or seeds.

Nep. See CATMINT.

NEPHRITIS, inflammation of the kidneys. See KIDNEYS.

NEREIS, in zoology, a genus of molluscous worms, comprehending twenty-nine species, most of which inhabit the North Seas: three or four are found on our own coasts. The chief is the *noctiluca*, having a body blue-green, with twenty-six segments, hardly visible to the naked eye; found in the British, and most other seas, and are the animals which frequently illuminate the water, making it appear as if on fire; by their minuteness, they easily elude observation, but they may be detected by passing a small quantity through blotting-paper. The *plagia*, inhabits the British and European seas: seven inches long. The *lamelligera*, has a flatish body, nearly two feet long; inhabits the Indian, Mediterranean, and Northern seas, among aquatic plants.

NERVE, or *Nervus*. The nerves are long, white, medullary cords which serve for sensation. They originate from the brain, or spinal marrow, hence they are distinguished into cerebral and spinal nerves, and distributed upon the organs of sense, the viscera, vessels, muscles, and every part endowed with sensibility.

The cerebral nerves are the olfactory, optic, the motores oculorum, the pathetici, or trochelatores, trigemini, or divisi, obducent, auditory, or acoustic, parvagum, and lingual. The spinal nerves are thirty pair, and are divided into eight pair of cervical, twelve pair of dorsal, and five of sacral nerves.

In the course of the nerves are a number of knots, called *ganglions*: they are commonly of an oblong shape, and of a greyish colour, somewhat inclining to red. Their uses are not distinctly known.

The use of the nerves is, to convey impressions to the brain from all parts of the system, and the principles of motion and sensibility, from the brain to every part of the system.

The *nervous system*, the organ of sense and motion, consists of the medullary substance of the brain, cerebellum, medulla oblongata, medulla spinalis, and of the same substance continued into the nerves, by which it is distributed to the different parts of the body.

In the living man there is in the brain a thinking quality, or *mind*, constantly present, and every phenomenon of thinking may be considered as an affection or faculty of the mind alone. But the mind, or thinking part, is so connected with the material and corporeal part, and particularly with the nervous system, that motions produced in this, excite thought, and thought, however produced, excites new motions in the nervous system. This mutual communication or influence is known as a fact; how it is produced, we cannot, nor do we believe any one ever has been able satisfactorily to explain. See MIND.

It is the opinion of many physiologists, that there is a subtle fluid in the nerves, by means of which impressions are carried instantly from the various extremities of the body to the brain. This fluid has never been seen; but its presence is presumed from the effect which takes place upon the ligature of a nerve. It might be the electric fluid.

Nervous diseases are, in common language, those which are supposed to arise from an increased sensibility of the nerves, &c.; but such terms are very inappropriate. See BILIOUS.

Wounds of the nerves, are often alarming and dangerous. See WOUNDS.

NERVINES, medicines which relieve disorders of the nerves.

Nervous fever. See TYPHUS.

NETTLE, or URTICA, a genus of plants, consisting of fifty-nine species, scattered over the globe; three common to our own wastes. The three following are cultivated: the *cannabina*, or Hemp-leaved nettle, a native of Siberia: the *Canadensis*, or Canada nettle, a native of Canada; and the *nivea*, Chinese, or white-leaved nettle, a native of the East Indies; they may be increased by slipping or parting the roots.

The *dioica*, or Common nettle, is well-known, and found every where. The aculei, or stings, have a small bladder at their base, full of a burning, corrosive liquor, which, when touched, are well known to produce violent itching and pain. The leaves of the common mallow are often used, by country persons, to remove the effect of nettle-stings, being rubbed green upon the part.

The *urens*, or Smaller stinging nettle, is also found on our commons; the *pilulifera*, or Roman nettle, has been recommended to raise an irritation in paralytic limbs.

The common nettle, though generally despised as a noxious weed, may be converted to culinary and economical purposes. The young shoots are often boiled and eaten by country persons, as an agreeable variety of greens. And the stalks are so like hemp in quality, that in some parts of Europe, and especially Siberia, they have been manufactured into cloth. Some years since, Mr. Smith, of Brentwood, in Essex, obtained the notice of the Society of Arts, for his samples of, and processes for, preparing *nettle-thread*, and *paper*.

We have no idea, however, that these productions can ever be brought to rival those of hemp, flax, or cotton; for we understand that the quantity of these articles produced from the nettle, is much smaller, in proportion, than is obtained from the usual plants; but as the nettle grows abundantly all over Europe, in wastes, where few other vegetables will grow, it may be had recourse to as a temporary substitute for hemp and flax, in times of scarcity.

Nettle, the dead. See DEAD NETTLE.

NETTLE-RASH, or *urticaria*, a cutaneous and eruptive disease, in which the skin has the same appearance as that when a person is stung by nettles. It affects some persons only for an hour or two; in others it continues for months or even years. It more commonly attacks females than males, and children more frequently than adults; it is not infectious. It has been supposed to arise from something applied to the skin, such as cowitch, or Spanish flies; but it is said that it may be, and indeed has been induced, by eating improper food; such as bullocks' liver, muscles, lobsters, imperfectly dressed fish, pork, &c.

It does not in general, require internal medicine. A mixture of oil, vinegar, and spirit of wine, may be applied to the skin, and will afford a temporary relief. Sudorifics may be also of service; a slight salivation, by the internal use of mercury, has also cured the disorder.

Nettle-tree. See LOTE-TREE.

NEUTRAL SALTS, in chemistry, are those salts which are composed of two substances, but which possess the properties of neither of the substances of which they are composed; the sulphates of magnesia, soda, and potash, the nitrate of potash, and muriate of soda, &c. &c., are neutral salts.

New Jersey Tea. See TEA.

NEWSPAPER, a periodical publication, either daily, weekly, on alternate days of the week, or at other periods. It contains the current reports or news relative to all sorts of public transactions, advertisements, &c. &c.

The following are the daily *morning* papers published in the metropolis: the Times; the Morning Chronicle; the Morning Post; the Morning Herald; the British Press; the Morning Advertiser; the New Times; the Public Ledger. The *evening* papers are the Courier; the Star; the Globe; the Sun; the Statesman; and the Traveller.

The General Evening Post, the St. James's Chronicle, the English Chronicle, the Commercial Chronicle, are published on Tuesdays, Thursdays, and Saturdays. The London Chronicle, the London Packet, Lloyd's Evening Post, the Evening Mail, are published Mondays, Wednesdays, and Fridays.

The principal Sunday papers are, the National Register; the Observer; the Sunday Recorder; the Independent Whig; Bell's Weekly Messenger; the News; the Weekly Dispatch; the Englishman; the Champion; the Examiner, the Sunday Monitor; the Sunday Advertiser; the Constitution; the Antigallican; and Neptune.

The Farmer's Journal, and County Chronicle, every Monday. The Courier de Londres every Tuesday and Friday. *The London Gazette*, by authority, every Tuesday and Saturday;

and an *Extraordinary Gazette* on particular occasions. The Hue and Cry, a police gazette, every third week. The British Mercury, Public Cause, Instructer, London Moderator, every Wednesday. The Law Chronicle every Thursday. The County Herald, the Surrey and Southwark Gazette every Friday. The Literary Gazette, every Saturday. Racing Calendar, sixteen numbers a year. The Literary Advertiser, the 10th of every month.

Of the morning papers are sold daily, about 12,000 ; of the evening papers about 10,000 ; of those published every other day, about 18,000 ; of the sunday papers about 26,000 ; of the other weekly papers about 20,000 ; and to these may be added, perhaps, 250,000 copies of the provincial weekly papers of the United Kingdom. A series of publications, comprising such a mass of information and intelligence, as is no where else to be found in the world !

On the utility and importance of such vehicles of information, it cannot be necessary for us to dilate ; their effects are undoubted, and sometimes almost electric. But although a great good, the newspapers are also productive of considerable evil, that of propagating scandalous falsehoods and injurious accusations, not only against individuals, but frequently also against all truth, justice, and decorum. In party matters it is often difficult to say, which are most to blame. In the reading of newspapers, newspaper reports, and newspaper argument, too much diffidence and circumspection cannot be adopted.

Newt. See LIZARD.

NIBBLER, or *mordella*, a genus of insects, consisting of thirty-four species, chiefly inhabitants of Europe ; a few of Asia, Africa, and America, nine indigenous to our own country, and found in flower gardens. The antennas moniliform, or pectinate ; head deflected, and bent under the neck ; shells curved downwards towards the tip ; at the base of the thighs is a broad lamina.

NICKEL, or *Niccolum*, a white metal which acts upon the magnetic needle, and is itself capable of becoming a magnet. It is difficultly fusible, but absorbs oxygen readily when heated red hot. It is malleable ; and its specific gravity is about 8·5.

Nickel is found native, combined with arsenic, and with arsenic acid. It is procured pure by the following process : Dissolve the metal sold under the name of nickel, in dilute nitric acid to saturation, and evaporate to dryness ; re-dissolve in water, and add nitrate of lead sufficient to precipitate the arsenic acid ; filter and immerse a plate of iron to separate copper ; filter again, and add solution of carbonate of potash ; wash the precipitate thus occasioned, and put it while moist into liquid ammonia, which dissolves the oxides of nickel and cobalt, leaving impurities o be separated by a filter ; add potassa to the ammoniacal solution, which precipitates the oxide of nickel, and which, by ignition with charcoal, affords a globule of the pure metal. Nickel dissolves in various acids. The salts of nickel are distinguished by the fine green colour of their solutions. There is only one alloy of nickel which requires notice, namely, that with iron, which forms the principal metallic ingredient in those lapideous masses, which, in different countries, have fallen upon our globe, and which are termed meteoric stones. See IRON, and METEORIC STONE.

NICKING, an operation often performed on the horse to raise the tail, and make him carry it more gracefully. Some horses do not require this operation, particularly such as are well bred, and are docked at an early age ; others may be improved by it in appearance ; but we doubt whether an interference with the muscular structure of horses, or indeed, of any other animal, can improve its capabilities ; on the contrary, we should suspect that nicking must injure many of the natural motions of the horse, added to which, it is a practice so cruel in its operation, that we should hope no one having pretensions to humanity will ever suffer it to be performed.

NICKAR, or *Guilandia*, in botany, a genus comprehending six species. The most remarkable are the *bonduc*, or Yellow nickar, and the *bonducella*, or Grey nickar, which are climbing plants, natives of the West Indies, where they rise to the height of twelve or fourteen feet: the flowers come out at the wings of the stalks, and are composed of five concave yellow petals. They are succeeded by pods, about three inches long, and two broad, opening with two valves, each inclosing two hard yellowish seeds, about the size of marbles. The *moringa*, or Morunga nickar, is a native of Ceylon, and some places on the Malabar coast.

NICTITANT MEMBRANE, in natural history, a thin membrane which covers the eyes of birds and fishes, sheltering them from too much light, or external injuries, and through which they can see pretty distinctly.

NIGHT, that part of the natural day, during which the sun is beneath the horizon. See DAY.

NIGHT-LIFE-BUOY, a buoy, invented for the preservation of the lives of sailors who accidentally fall overboard from ships during the night.

One of the most useful machines of this kind, has lately been invented by Mr. COOK, an account of which, with a plate, will be found in the 30th vol. of the Transactions of the Society of Arts. This buoy is secured on two iron rods, and connected by a light chain to a spring; a piece of copper, on which the composition of port-fire is laced with wire, screwed into a perpendicular staff; and a common lock fixed in a piece of wood, placed at the head of the staff, with a copper tube, leading horizontally from the pan to the priming of the composition, which contains a quick metal quill-tube, form the whole apparatus necessary for its use, so that, in the event of a man falling overboard, the lanard of the lock is pulled, the spring touched, and immediately a bright flame, not readily extinguished by the wash of the sea, is displayed, and points out a rendezvous for the man, and for the boat sent to his assistance.

Nightingale. See WARBLER.

Nightmare. See INCUBUS.

NIGHTSHADE, a name vulgarly given to several plants of different genera. The principal are included in the following articles.

NIGHTSHADE, or *Solanum*, a genus of plants, having a wheel-shaped corol; anthers slightly cohering; opening by two pores at top; berry superior, two celled. Eighty-three species scattered over the globe. They are thus subdivided:—not armed with thorns; armed with prickles. The following are the chief:

The *Lycopersicum*, Tomato, love-apple, or mad-apple.

The *Dulcamara*, Woody-nightshade, or bitter sweet, found wild in our own hedges, and flowering in June and July. The root is woody, as is also the stem, which is roundish, branched, and climbing sometimes to the height of six or eight feet. The leaves are smooth and soft, about two inches long, and one broad, of a dull green colour. The flowers are in elegant clusters opposite to the leaves: the corol consists of bright violet-coloured segments, with two green dots at the base, and a deeper purple vein through the centre of each segment; the anthers are lemon-yellow. The berries ripen in September and October; they are oval, scarlet, very juicy, bitter, and poisonous, exciting violent vomiting and purging.

The extreme twigs are the parts employed in medicine: they should be gathered in Autumn. Both the fresh and dried twigs are inodorous; they have a slightly bitter taste, followed by a sweetness not unlike that of liquorice-root, with a slight degree of acrimony. Boiling water extracts all their medical properties, which, nevertheless, long boiling will destroy. It is diuretic and narcotic; and has been found useful in asthma, dropsy, chronic rheumatism, leprosy, and the itch. Given in large doses, it occasions nausea, vomiting, fainting, and palpitation of the heart. It should be, therefore, given in small doses at first. It is usually given in *decoction*, which is made with one ounce of the stalks sliced, in a pint and a half of water boiled down to a pint, and strained. The dose of this is from half a fluidounce to one fluidounce, combined with any aromatic tincture, and given three times a day.

The dose of the powder is, from ten grains to one drachm, taken in a teacupful of milk.

The *Nigrum*, Garden nightshade, or Common nightshade, grows among rubbish, or dung-hills, and kitchen gardens: it flowers from June to October. It is generally considered a poisonous weed; the whole plant is refused by every kind of cattle.

The *Æthiopicum*, or Ethiopian nightshade.

The *Melongena*, Egg-plant, or Large-fruited nightshade, an annual plant with large blue flowers; the fruit, resembling a hen's egg, eaten when boiled.

The *Verbascifolium*, or Mullein-leaved nightshade.

The *Pseudo-capsicum*, Shrubby nightshade, or winter cherry, a native of Madeira.

The *Quercifolium*, or Oak-leaved nightshade; the *mammosum*, or Dug-fruited nightshade; the *indicum*, or Indian nightshade; the *carolinensa*, or Carolina nightshade; the *sodomeum*, or Black-spined nightshade; the *sanctum*, or Palestine nightshade, we can merely name.

The *Tuberosum*, Common potatoe, or tuberose nightshade, is too well known to need description, as a valuable esculent. See POTATOE.

The egg-plant must be raised from seeds in a hot-bed, and afterwards planted in pots, in a green-house, or some warm, sheltered spot; this and one or two others of this tribe are also known to be useful esculents.

NIGHTSHADE, the DEADLY, DWAY-BERRIES, DEADLY DWALE, or *Atropa*, a genus of plants comprising seven species, mostly natives of warm climates, having a campanulate corol; stamens distant; berry, superior, globular, two-celled. Those chiefly deserving of notice are

The *Mandragora*, or Mandrake, grows naturally in the south of Europe and the Levant. The root, it was formerly pretended, resembled the body and thighs of a man. It was also in the materia medica, but now expunged. Many superstitious stories have been told of this plant, which the good sense of the age no longer credits.

The *Belladonna*, or Deadly nightshade, is an indigenous perennial, found in many parts of Great Britain, flowering in June, and ripening its berries in September. The stalks are annual, purple-coloured, herbaceous, branching, round, and leafy. The leaves are egg-shape, pointed, entire; above, of a dusky green; below paler, soft and felty to the touch. The flowers are large, drooping, and have a faint narcotic odour; The corol is bell-shaped, of a livid hue externally, within, brownish, or violet, with a yellow variegated bar. The ripe berry is large, roundish, with a longitudinal furrow on each side, of a deep purple colour, with many seeds, and a sweetish violet-coloured juice. The leaves are inodorous; they do not lose their active properties by drying. Every part of this plant is poisonous; children and the ignorant have often suffered from eating the berries, the beautiful appearance of which, and their sweet taste, render them very alluring. The symptoms which they induce are those of intoxication, accompanied with fits of laughter, violent gestures, stupor, delirium, convulsions, and death. For the mode of treatment of those who have eaten these berries, see POISON.

Belladonna is, therefore, a very powerful narcotic; it is besides diaphoretic, and diuretic. Its effects appear, however, to depend altogether on its narcotic powers; but they have not been sufficiently constant to insure its general use. Externally used, either as a fomentation, or the dried leaves powdered and sprinkled over the parts, it is of singular efficacy in diminishing the pain caused by cancerous and ill-conditioned sores. An infusion dropped into the eye, produces a great dilatation of the pupil; it has been used for such dilatation as a means for assisting the extraction of the cataract. By continued use it loses its effect; but regains it after the application has been for a short time suspended.

It may be given in substance, beginning with one grain of the dry leaves powdered, and gradually increasing the dose to 12 or 14 grains; or of an infusion made with one scruple of the dried leaves in ten fluidounces of boiling water, two ounces may be given daily, and cautiously increased.

An *Extract* is made by bruising the leaves in a stone mortar, sprinkling a little water over them, then expressing the juice, and without a separation of the sediment, boiling it down to a proper consistence. Its medicinal properties are the same as the plant, but weaker. The dose is from one grain, gradually increased to five, made into pills.

NIGHTSHADE, AMERICAN, or *Phytolacca*, a genus of plants consisting of six species, natives of Abyssinia, North and South America, and one of Switzerland. The following are cultivated: the *octandra*, or White-flowered; —the *decandra*, or Branching—the *icosandra*, or Red,—and the *dioica*, or Tree phytolacca. The leaves of the *decandra*, in Virginia and other parts of America, are boiled and eaten like spinach; the juice of the root is said to be violently cathartic. They afford ornament and variety among potted plants of the stove kind; the *decandra*, in the borders of the natural ground.

NIPPLE, or *papilla*, the small projecting portion in the middle of the breasts of men and women. It is much larger in the latter, and has an opening in it from the excretory ducts of the lacteal glands. See BREAST.

Various methods have been recommended to increase the size of diminutive nipples in young mothers, of the utility of all of which expedients we entertain great doubts. The most likely however is to apply to them a strong healthy sucking child. The best remedy for sore nipples, is *pomade divine*. See POMADE DIVINE.

NIPPLE WORT, DOG CRESS, or *Lapsana*, a genus of plants consisting of five species, four European, one a native of Barbary: two of the first common to our own country; the *minima*, stemless, with obovate leaves, found in our dry fields, and the *communis*, caulescent, with ovate leaves, found in our wastes, and formerly employed as a lactescent bitter, and as possessing the same virtues as celery, endive, and dandelion.

NITIDULA, a genus of insects consisting of forty-three species, subdivided into two sections according to the form of the lip; one, the lip cylindrical, the other, the lip square. They are chiefly inhabitants of Europe, a few of South America, and common to our own country: the first section are chiefly aquatic, found in stagnant waters, and under duck weed; the rest are found on plants and flowers; one, the *bipustulata*, oval, black, with red dotted shells, feeds on carcases, meat, and bacon.

NITRATE, in chemistry, a salt formed by the union of nitric acid with alkalies, earths, or metals. The nitrates are an important class of bodies; the chief nitrate, however, is the nitrate of potash, which see.

NITRATE OF POTASH, NITRE, or SALTPETRE, is an abundant natural product, and is principally brought to this country from the East Indies, where it is procured by lixivation from certain soils. In Germany and France it is artificially produced in what is termed nitre beds. It crystallizes in six-sided prisms, usually terminated by dihedral summits; it dissolves in seven parts of water at 60, and in its own weight at 212°. Its taste is cooling and peculiar. It consists of one proportional of acid, equal to 50,5, and one proportional of potash, equal to 45. Or of

6 proportionals of oxygen, 5 in the acid, 1 in the alkali	45
1 proportional of nitrogen	13
1 ditto potassium	37,5
	95,5

When exposed to a white heat it is decomposed into oxygen, nitrogen, and potassa. It fuses at a heat below redness, and congeals, on cooling, into cakes called *sal prunella*. It is rapidly decomposed by charcoal at a red heat; and if excess of charcoal be used, the results are carbonic oxide, and acid, and nitrogen, and sub-carbonate of potassa, formerly called nitrum fixum.

A mixture of three parts of nitre, two of dry sub-carbonate of potassa, and one of sulphur, forms *fulminating powder.*

Gunpowder consists of a very intimate mixture of nitre, sulphur, and charcoal. See GUNPOWDER.

Nitre is of considerable use in various arts, in the making of gunpowder, in the preservation of animal food, in the assaying of ores, &c. &c.

It furnishes also all the nitric acid in all its states, employed either by chemists or artists. Its solution in water produces cold; hence its use in freezing mixtures. In medicine nitrate of potash is refrigerant and diuretic; and when externally applied in solution, it is cooling and detergent. If taken in repeated small doses, it abates heat and thirst in diseases of increased excitement, diminishes the force and frequency of the circulation of the blood, and increases the secretion of urine. It is therefore efficaciously given in all inflammatory diseases, active hæmorrhages, and in herpetic eruptions. But it is of little use in dropsies; and should not be given in typhus and hectic fever. A small portion of it dissolved slowly in the mouth often removes inflammatory sore-throat; and hence its use in gargles in that complaint. It may be given, dissolved, in mucilaginous fluids, as almond emulsion, in moderate doses, not exceeding fifteen grains, frequently repeated. In large doses it excites nausea; and one ounce given as a dose by mistake for Glauber's salts, as has sometimes been the case, produces excessive purging, bloody stools, convulsions, and sometimes death.

When a person has taken so large a dose of nitre that it operates as a poison, the same treatment must be adopted as that directed for the poison of arsenic, except that the lime water there mentioned must be omitted. See the following articles.

NITRATE OF SILVER, a powerful and useful caustic. See SILVER.

NITRIC ACID, the fourth compound of nitrogen with oxygen. See NITROGEN. It is usually obtained from nitre, three parts of which are distilled with two of sulphuric acid. This distillation may be conducted upon a small scale in a glass retort, with a tubulated receiver passing into a bottle. The requisite heat is obtained by a lamp. But a manufacturer who prepares nitric acid upon a large scale employs, generally, distillatory vessels of stone-ware, to which are attached large glass globes for the condensation of the acid. In the London Pharmacopœia, equal weights of sulphuric acid and nitre are directed to be employed, but this excess of sulphuric acid is more than requisite.

The nitric acid of commerce, as obtained by these processes, is always impure, and muriatic and sulphuric acids may usually be detected in it. The former may be separated by nitrate of silver; the latter by muriate of barytes. For pharmaceutical purposes the ordinary acid is generally sufficiently pure. And if pure nitre and pure sulphuric acid be employed in its production, and the latter not in excess, there is little apprehension of impurity in the resulting acid.

Nitric acid is a colourless liquid, extremely sour and corrosive. Its specific gravity is 1,42; it always contains water, which modifies its specific gravity. At 250° it boils, and distils over without change; at 40° below 0, it congeals. It absorbs water from the air, and its bulk is thus increased while its specific gravity is diminished. It is usually coloured by nitrous acid gas, which it evolves when heated. It combines with the alkalies, earths, and metals, forming nitrates.

Nitric acid is used for various purposes in the arts. It is used in an undiluted state in medicine, for the purpose of fumigation for destroying contagion. See CONTAGION. It is also used in the preparations of various medicines. See QUICKSILVER, OINTMENTS, SILVER, and SPIRITS. This acid, in a state of strong dilution with water, is called aqua fortis. See **Aqua fortis.**

Diluted nitric acid. Take of nitre one fluidounce; of distilled water nine fluidounces. Mix them.

Nitric acid is tonic and antiseptic. When largely diluted with water it forms an agreeable and useful beverage in fevers, particularly those of the typhous kind. In larger doses, less diluted, it has been given with advantage in protracted complaints of the liver, even when dropsy has taken place; and it has also been found serviceable in dyspepsia, asthma, and many cachectie complaints. It is also of service given with mercury in old obstinate ulcerations of the legs, and it is said to be also occasionally beneficial even in syphilis. In the form of lotion, in the proportion of two fluidrachms of the diluted acid to one pint of water, it is beneficial to fœtid ulcers, and in caries of the bones. In India, and in this country, it has been combined with the muriatic acid, in the form of a bath, and produces the same effect as when taken internally. The dose of the diluted acid is from ten to thirty drops, in three fluidounces of water, given three or four times a day. When used as a bath, the mixed acid should be added to the water till it is about as sour as weak vinegar.

This acid, as well as its dilutions, tinge the skin of an orange colour more or less deep. If, therefore, it has been taken as a poison, the presence of orange spots upon the lips, chin, or hands, is a certain indication of its presence; and if death be the result, the same colour will be found in a large portion of the alimentary canal, the mucous membrane of which is converted into a fatty substance, and the stomach often perforated. For the mode of treatment of those who have taken this acid as a poison, or by mistake, see **Aqua Fortis.**

NITROGEN, or **Azote,** one of the constituent principles of atmospheric air. We described this article under the term azote; we shall here consider some of its most important compounds.

Nitrogen and oxygen unite in four proportions, and form the compounds called nitrous oxide, nitric oxide, nitrous acid, and nitric acid, the last of which we have treated of in the preceding article.

Nitrous oxide may be obtained by distilling the salt called nitrate of ammonia, at a temperature of about 420°. The gas which passes off may be collected over water and is nitrous oxide. Its specific gravity to hydrogen is as 20,5 to 1. Its taste is sweet, and its smell peculiar, but agreeable. It produces, when respired, the singular effects of intoxication; but the experiment of breathing this gas cannot be made with impunity, especially by those who are liable to a determination of blood to the head. It supports combustion. It is easily absorbed by water, which takes up about its own bulk, and evolves it unchanged, when heated.

Nitric oxide is usually obtained by presenting certain substances to nitric acid, which abstract a portion of its oxygen, leaving the remaining elements in such proportions as to constitute the gas in question. Put some copper filings into a glass bottle with nitric acid, diluted with thrice its bulk of water, red fumes are produced, and there is a copious evolution of the gas, which may be collected and preserved over water. It is presently recognised by the red fumes which it yields when brought into contact with air. Its specific gravity to hydrogen is as 14 to 1. When washed with water it is not acid. It extinguishes most burning bodies, except phosphorus.

Nitrous acid gas. When nitric oxide is presented to oxygen, the two gases combine, and a new gaseous compound of a deep orange colour results. This compound is not easily examined, because it is absorbed both by quicksilver and water, so that we are obliged to resort to exhausted glass vessels for its production. When two volumes of nitric oxide, with one volume of oxygen, are thus mixed, they become condensed to about half their original volumes, and form *nitrous acid gas.* This gas supports the combustion of the taper, of phosphorus and of charcoal, but extinguishes sulphur. It is readily absorbed by water, forming a green sour liquid. Its specific gravity to hydrogen, is as 28,6 to 1.

Nitro-muriatic acid. See AQUA REGIA.

Nits in Horses. See LARKSPUR.

NOAH'S ARK, a genus of bivalve shell-fish, comprehending forty-three species, found in the seas of every quarter of the globe; the most common in the European seas is the *nucleus*, the size of a hazel nut, the shell unequally triangular. It is also sometimes found in a fossil state.

Noddy. See TERN.

NON-NATURALS, in medicine, are air, exercise, meat, drink, sleep, watching, retention, excretion, the passions, &c. &c. The term is now however much less used than formerly.

NOOTH'S APPARATUS, in chemistry, a machine for saturating fluids with various gases. It consists of three glass vessels, the lowest of which has a very broad flat bottom, that the whole may stand steadily. The middle vessel, which is in the form of an urn, has a glass stop-cock to draw off the liquor by; into the middle vessel dips the end of the uppermost vessel of a smaller size but of the same shape, which is intended to afford a small pressure on the gas, and also a constant circulation of the liquor from the one to the other, by means of a bent tube, in which the uppermost vessel terminates, and which passes down into the middle vessel through an aperture in its top. At the upper part of the last vessel is a stopper, which is the only joining of the whole apparatus that is not required to fit tight, as it is intended to allow the excess of gas to escape. This apparatus has been improved upon by Dr, Hamilton. But although for common purposes this mode of impregnating water with gas answers tolerably well, yet it is very far short of the power of the forcing pump, by which method all the brisk artificial carbonated waters are made.

NOSE, or *Nasus*, in anatomy, the external organ of smelling, or that part which projects from the middle of the human face.

The *nostrils* are the two passages of the nose, which communicate interiorly with the upper part of the mouth. The cavity of the nostrils is composed of fourteen bones, viz. the frontal, two maxillary, two nasal, two lachrymal, two inferior spongy, the sphenoid, the vomer, the ethmoid and two palatine bones, which form several eminences and cavities. All the parts are covered with periosteum and a pituitary membrane, which secretes the mucus of the nostrils. The use of the nostrils is for smelling, respiring, and speech.

The nose is liable to various accidents and diseases. The chief is BLEEDING AT THE NOSE, which see; see also POLYPUS.

NOSOLOGY, that peculiar and important part of medicine which relates to the description of diseases and their arrangement.

Various nosological arrangements have been offered to the public by CULLEN, SAUVAGES, LINNÆUS, VOGEL, SAGAR, and MACBRIDE, to which may be added the names of BROWN, DARWIN, and GOOD. Of all these, Cullen's is generally adopted by medical practitioners in this country; but we consider Cullen's very incomplete, and the rest are open to a variety of objections. There appears yet wanting a master mind to settle various anomalies and discordancies in the hitherto imperfect art of medicine.

NOSTALGIA, a disease, distinguished by a vehement desire of returning to one's own country. This disease is one to which the natives of Switzerland are said to be peculiarly liable. It is attended with gloom, melancholy, loss of appetite, and want of sleep. The best remedy, we conclude, must be to comply with the wishes of the patient.

Nostril. See NOSE.

NOSTRUM, a medicine, the composition of which is not made public, but remaining in the possession of some individual: the word is, however, often applied to those medicines not sanctioned by public medical bodies, or regular medical practitioners: in this sense quack medicines are nostrums. See QUACK MEDICINES.

Nourishment. See NUTRITION.

NOVELS, literary works well known, that occupy a considerable portion of the time of young persons, which might be more usefully and advantageously employed.

It admits of considerable question, whether the human mind should be educated at any time through the medium of a fiction, but it cannot certainly admit of any doubt, that if fictitious writings be read, they should be such as tend to shape the mind to virtue and to truth. We think it possible to frame fictions so as to convey the most important moral lessons, but we are sorry to observe that those fictions, which are read with the greatest avidity, are not in general those which the moralist would desire to put into the hands of the young and inexperienced. It is not sufficient, in our judgment, that such fictions are transcripts of human nature, there are certain parts of human nature which we would most sedulously shut out from the young mind.

The growth of a young and delicate flower may be for ever blasted by one rude breath, whereas, after it has acquired strength, it may be able to brave the fury of the wildest storm. An indiscriminate perusal of novels should, therefore, to the young in particular, never be permitted.

NOVELTY, newness, the state of being unknown to former times or to individuals; so that many common things may be to some persons, from the confined sphere in which they move, novelties.

The love of novelty prevails chiefly in children, in idlers, and in men of shallow understanding: yet it appears common to the whole family of man, although evinced in various ways. When the desire for novelty is centered in shew, equipage, dress, and the silly distinctions amongst mankind, it is misdirected; when to the improvements in science and the well being of our species, it is meritorious. See CURIOSITY.

Numbness. See PALSY.

NURSE, a woman who suckles young children; it implies also a woman who attends on sick persons. We shall consider the last office only here, referring to our article INFANCY, relative to the first.

The duties of a nurse, who attends on sick persons, are many and important: upon nursing very often depends the recovery or death of the patient. A good, observing, and tender nurse, has it often in her power, not only to soothe the pains and anxieties of the patient, but by noting the particular symptoms as they occur in the absence of the medical attendant, and the operation of the medicines, on her report will greatly depend the future measures which the physician may think it right to adopt. On the nurse too depends the regulation and administration of both food and medicine; and if she is not well informed on both these subjects, much and irretrievable mischief may be the result. It is scarcely necessary to add, that a nurse should be cleanly in her own person, of sober and temperate habits, able to endure fatigue, watching, and not liable to have her mind easily disturbed.

NURSERY, in horticulture, a piece of land appropriated for raising or propagating plants and trees, with a view to supply both gardens and plantations. The nursery requires the same position as the garden. See GARDEN, and the various articles on sowing, planting, &c. throughout our work.

NURSERY, in domestic economy, an apartment devoted exclusively to the rearing of children.

In towns and large cities, the nursery is generally some room in the upper part of the house. Such room should be airy, lofty, and perfectly dry. But in the country such elevation is neither desirable nor necessary. The more readily and easily children can be taken into the open air the better: nothing is more mischievous to the infantine constitution and health, than much confinement in rooms, how spacious and airy soever they may be: for no room can be a succedaneum for the stimulus of light to be obtained in the open air: and if even large airy rooms have their disadvantages when children are long confined in them, how much more injurious must be small, dark, and close ones?

Nut, bladder. See BLADDER NUT.

Nut, cashew. See CASHEW NUT.

Nut, chocolate. See CACAO.

Nut, fansel. See CABBAGE TREE.

Nut, hazel. See HAZEL NUT.

Nut, physic. See PHYSIC NUT.

Nut, pistacia. See PISTACHIA.

Nut, wall. See WALNUT.

NUTHATCH, or *Sitha*, a genus of birds, comprehending twelve species, chiefly natives of America and the West Indies, a few of the Cape, and one of Europe. This last is denominated the *Europœa*: it is cinereous, beneath reddish; tail feathers black; the four lateral ones beneath tipt with white; another variety less in size. This species is not uncommon to our own country; it creeps up and down the trunks of trees like the woodpecker tribes, and builds in their hollows. If the entrance of the hole be too large, they artfully fill it up with clay till it admits only their own body. When the nest is constructed, it is used as a magazine for winter provisions and a retreat during the night. They feed on ants, and also on the kernel of nuts, the shells of which they break with their bills, and on almost every kind of insect and their larves. In the pairing season this bird sings during the day; at other times it is said to sing in the night.

NUTMEG, or *Myristica*, a genus of plants, consisting of three species, as follow:

The *Sebifera*, a Guiana tree, with leaves hearted, oblong, downy underneath and downy fruit. It rises from forty to sixty feet high, discharging a thick acrid red juice from its trunk on being wounded; it yields a nutmeg, from which a considerable portion of fatty oil is expressed, which is employed in Guiana for making candles.

The *Fatua*, or Nutmeg-tree of Tobago, rises to the height of our common apple-tree, having oblong, lanceolate downy leaves and downy fruit; the nutmeg is aromatic, but narcotic; and when taken in considerable quantity produces delirium.

The *Moschata*, is a native of the Molucca islands; but it has been nearly extirpated from the greater number of them by the narrow policy of the Dutch, and is cultivated at Banda only, where a sufficient quantity is reared to supply with mace and nutmegs the whole of Europe. It rises to the height of thirty feet. The leaves are of a bright green colour on the upper surface, and greyish beneath, with an aromatic taste; they are elliptical, pointed, undulated, entire, and obliquely nerved. The flowers, which are inodorous, are present at the same time with the fruit, and male and female on the same and separate trees. The fruit is a one-celled berry, the size of a small peach; the flesh is thick, rather solid, and finally dries up to a coriaceous crust, which opens at one side and displays the nutmeg in a dark shell, surrounded with a skin, which, when growing, most probably covers it, but is found shrunk into the filamentous substance called MACE. The kernel of the shell beneath the mace is, of course, the nutmeg. The nutmeg-tree yields three crops annually, the first, which is the best, in April; the second in August, and the third in December. The fruit, however, requires nine months to ripen. When gathered, the outer covering is first stripped off, then the mace carefully separated and dried. The nutmegs in the shell are next exposed to heat and smoke for three months, then broken and the kernels thrown into a strong mixture of lime and water, after which they are cleaned and packed up. This process is, it is said, necessary for their preservation, and with the same intention the mace is sprinkled with salt water. There are several varieties of this tree, but the Queen nutmeg, which bears a round, small nut, is the best.

Nutmegs, mace, an *essential oil of nutmegs,* and an *expressed oil of nutmegs,* erroneously called oil of mace, are well known in commerce, and the two first as spices. They are all imported from the East Indies.

The medicinal properties of nutmegs and mace, depend chiefly on the essential oil which they contain; both are stimulant, carminative, and, in large doses, narcotic. The nutmeg and its essential oil, are in frequent use to cover the disagreeable taste of other medicines, and are sometimes given in languor, vomiting, diarrhœa, and in flatulent colic. On account of the narcotic property of the oil, nutmeg should be cautiously employed in paralytic and apoplectic habits: In India, its dangerous effects have been frequently felt; and in this country, instances have occurred, where stupor, delirium, and insensibility, have been the consequence of its inordinate use. The essential oil is sometimes employed as an external stimulant; it is also applied, dropped on cotton, with advantage, to carious, and aching teeth; indeed, we have known a bit of the solid nutmeg itself, placed in the hollow of the tooth, relieve the pain. The expressed oil is of little or no use whatever.

The dose of the nutmeg and mace is from five grains to a scruple; of the essential oil, from two to four drops on sugar, or other convenient vehicle.

A *spirit of Nutmeg* is ordered by the London College, which is a very convenient addition to other cordial medicines. The dose is from one fluidrachm to half a fluidounce.

NUTRITION, or NOURISHMENT, the completion of the assimilating functions. The food, changed by a series of decompositions, and rendered suitable to the being which it is designed to nourish, is applied to those organs, the loss of which it is to supply: this combination, or union of nutritive matter with our different organs, constitutes nutrition.

The living body is continually losing, from a variety of causes, its constituent parts. Thus the animal machine is continually changed, and at distant periods of life, does not, perhaps, contain a single particle of the same constituent parts. It has been said, that an interval of seven years is necessary for the same particles to be totally exchanged, and their place supplied by others; but this change is, most probably, much more rapid in infancy and youth; in manhood it is slower; and in old age, slower still. But sex, temperament, climate, profession, mode of living, and a variety of other causes, must accelerate or retard this period, so that it is impossible to affirm any thing as to its precise duration.

It appears, that in living bodies, such combinations and decompositions occur, as art cannot imitate: bodies which appear to us simple, as sulphur, and silex, seem to form themselves of other parts; while some bodies, the composition of which we cannot determine, as certain metals, suffer inevitable decompositions; from which we may fairly conclude, that the powers of nature, in the composition and decomposition of bodies, far surpass the science of the chemist. See ALIMENT, and FOOD.

NUX VOMICA, the seed of the fruit or berry of the *strychnos nux vomica*, a tree growing in the East Indies, consisting of three species, as follow: the *nux vomica*, with ovate leaves, and flowers greenish white; the berry, the nux vomica of the shops. The *potatorum*, and the *colubrina*, are the other species.

The *Nux vomica*, is a round flat seed, about an inch or less broad, and nearly a quarter of an inch thick, with a prominence in the middle, on both sides, of a greyish yellow colour, and covered with a kind of woolly matter; and internally, hard and tough, like horn. Its taste is extremely bitter, but it has no remarkable smell. It is reckoned amongst the most powerful poisons of the narcotic kind, and especially to brutes; nor are instances wanting of its deleterious effects on the human species. It has been employed occasionally upon the Continent, in some spasmodic affections, &c., but to the cautious medical practice of this country it is unknown.

Chemists have lately obtained the poisonous principle of the nux vomica, in a very concentrated state: it is a species of alkali, to which the name of *strych-*

nine, or *strychnia*, has been given. This substance is of a white colour; it crystallizes in four-sided prisms; it is destitute of smell, and not altered by exposure to air, but its taste is intensely bitter, leaving a metallic impression in the mouth. It combines with various acids. When introduced into the stomach it acts with prodigious energy; a locked jaw is soon produced, and the animal is speedily destroyed; half a grain blown into the throat of a rabbit, killed it in five minutes.

When *nux vomica*, the poison of the *upas*, *Ignatius's bean*, *false angustura*, *camphor*, in large doses, or *cocculus indicus*, are introduced into the stomach, or applied to wounds, they are rapidly absorbed, and affect the brain, and spinal marrow, near the neck, occasioning general rigidity, convulsions, and death in a very few minutes, if the dose of the poison has been great; none of these inflame the part they touch. The effects of some are not continual, but give rise to fits, from time to time, in the intervals of which the individual appears little affected.

As soon as possible after the accident is discovered, give the emetic, as directed under **Mushroom**; and vomiting should be promoted by irritating the throat with a feather. The impeded respiration is next to be attended to: the lungs must be inflated in the manner directed under **Charcoal**; and give internally, two spoonfuls of the following mixture, every ten minutes: Two ounces of water, one drachm of ether, two drachms of oil of turpentine, and half an ounce of sugar.

If the poison has been introduced into a wound, the same treatment, that is, the administration of the turpentine mixture, and inflation of the lungs, is to be pursued; in addition to which, the wound should be cauterized with an iron heated as much as possible, and a ligature should be tightly applied above the wounded part. If the patient be robust, bleeding may be performed. Salt water, employed by the Indians, as an antidote for these poisonous substances, is improper, and should not be used.

Nymph, in botany. See **Chrysalis.**

NYMPHOMANIA, or *Furor uterinus*, is, in most instances, either a species of madness, or a high degree of hysterics. Its immediate cause is a preternatural irritability of the uterus and pudenda of females, or an unusual acrimony of the fluids in these parts. The symptoms are hysterics, and extraordinary behaviour, indicative of the greatly disturbed state of the pudenda. The patient looks, acts, and speaks, without that restraint which modesty, in other cases, most rigidly expects and exacts from the female character.

If this complaint continue long, it degenerates into mania. In the cure, blood-letting is usually had recourse to; cooling purges will be also of service, and a spare diet. Perhaps, however, the best chance of cure is marriage. The employment and active engagement of both mind and body, in some interesting pursuit, may be also advantageous.

O.

OAK, or *Quercus*, a genus of trees, consisting of twenty-seven species, scattered over the globe, of which two are indigenous to our own country. The following are cultivated:

The *Robur*, or Common oak, well

known to every one; and proverbially to every Englishman. It rises in woods, when surrounded by other trees, or of its own kind, to fifty or sixty feet or upwards in height, but when planted singly, is rather a spreading than a lofty tree, sending off horizontally, prodigious branches, which divide and subdivide. *There are several varieties, from a variation* in the leaf, form of the tree, or duration of the foliage. It is of slow growth, and generally takes, at least, a century to arrive at any tolerable size; often, a much longer period: some oaks are supposed to be many centuries old. An oak growing in Penshurst park, in 1794, measured in girth, at five feet from the ground, 24 feet, and in height 73 feet; the girth of the lowest, but not largest, limb, was six feet nine inches. Oaks are, however, occasionally found of larger dimensions than these.

The *Phellos*, or Willow-leaved oak, grows forty or fifty feet high, with lanceolate leaves, like the willow. The acorns are sweeter than the common oak, and are eaten by the Indians; they yield a oil little inferior to oil of almonds. It is a native of North America.

The *Prinus*, or Chesnut-leaved oak, grows to fifty or sixty feet high, with ovate, elliptic, deeply-toothed leaves, a native of North America.

The *Nigra*, or Black oak, with bark discoloured and dark, grows thirty or forty feet high, having wedge-formed, somewhat hearted, obscurely lobed leaves. North America.

The *Rubra*, or Red oak, is sixty feet high, leaves of a reddish colour, glabrous on both sides. North America.

The *Alba*, or White oak, grows to the height of thirty or forty feet. Virginia.

The *Esculus*, or Small prickly-cupped oak, grows to about thirty feet high; the bark is purplish; leaves pinnatifid. A native of the south of Europe; acorns often used as food.

The *Œgilops*, or Great prickly-cupped oak, is seventy, eighty, or more feet high; trunk very large; leaves ovate-oblong. A native of the Levant.

The *Cerris*, or Turkey oak, is thirty or forty feet high, with sinuate, pinnatifid leaves; the calyx beset with rough prickles. South of Europe.

The *Infectoria*, seldom exceeds six feet in height, it is the oak on which gall-nuts grow; a native of Asia Minor. See Gall.

The Ilex, Ever-green, or holm oak, grows to the height of forty or fifty feet; leaves ever-green, lanceolate, or oblong. Three varieties, one with leaves lanceolate, very entire; with leaves lanceolate, serrate; with oblong leaves, having pungent teeth. A native of the South of Europe.

The *Grammuntia*, or Holly-leaved evergreen oak, grows forty or fifty feet high, with leaves like those of the holly. South of France.

The *Suber*, or Cork-tree, grows to thirty or forty feet high; its bark is thick, tough, fungous, the common cork of the shops. See Cork-tree; the leaves are evergreen, ovate, oblong: South of Europe.

The *Coccifera*, Scarlet, or kermes oak, rises about fifteen feet in height, with ovate, hearted, tooth-spinous leaves. The branches are covered with small excrescences, which are the nidus of the insect called coccus ilicis, and produce the dyeing substance named kermes, or scarlet pastel. See Coccus and Kermes.

These are all propagated by sowing the seed of the acorns. In sowing the acorns of the common oak for plantations, prepare some beds of fresh earth, neither too strong nor heavy, nor too light and dry. In these beds, place the acorns in rows one foot asunder, and about two inches distant in the rows, covering them about two inches thick with the same fresh earth. In the spring, when the plants begin to appear, they must be carefully cleared from weeds; and if the season be dry they should be occasionally watered. In these beds the plants should remain till the following autumn; at which time a spot of good fresh earth should be chosen proportionate to the number of grown plants, which should be well trenched and levelled, in which, towards the middle or latter end of October, the plants should be carefully taken up and planted in rows, three feet apart, and eighteen inches distant from plant to plant. When they are planted, a little mould should be laid upon the surface of the ground if they are designed as clumps in parks, &c. But if for timber, it is best to sow the acorns in the places where they are to remain, and then it is most advisable to plant them much thicker than above described: indeed, the best method is to plant the ground with double as many acorns as you expect will come to maturity, and to pull up the most indifferent plants, leaving the most vigorous to stand, never to be transplanted at all; but in this case it will be advisable to loosen the ground to a considerable depth, say two or three feet.

The acorns should be chosen from straight, upright, vigorous-growing trees. They should be gathered from under the trees as soon as may be after they have fallen, and, if possible, in a dry time, laying them in some open room to dry; after which they may be put in dry sand, and preserved in a dry place till the end of November, when the ground should be prepared for planting them.

The uses of oak timber and its bark are various, great, and important, and too well known to need our specifying them here. See Acorns and Tanning.

The bark of the *Robur*, or Common oak, is tonic and astringent. It should be obtained in the spring from the smaller branches. It has been occasionally given in agues, but is inferior to the Peruvian bark. It is useful in obstinate diarrhœa and alvine hæmorrhages; and is recommended by Dr. Underwood, in the malignant coryza, or *snuffles* of infants. Its principal use, however, is as a local astringent; for which purpose a *decoction* is made of it thus: Take of oak bark bruised one ounce, of water two pints; boil down to one pint and strain. It is used as a gargle in sore throat and relaxation of the uvula; and an injection in passive uterine hæmorrhages, in leucorrhœa, and the gleety discharge which remains after abortion. It is also a useful wash for the piles, and the falling down of the anus.

The dose of the bark, if taken in substance, is from fifteen to thirty grains.

Oak, Jerusalem. See Goose foot.

Oak, the poison. See Sumach.

OAK LEATHER, or *Xylostroma*, a leathery expanded fungus, consisting of one species only, a native of our own country, and well known as being found on the oak.

OAR, in navigation, a long piece of timber, flat at one end and round or square at the other, and of various lengths, whereby a boat, barge, or galley, &c. is rowed or propelled in the water.

A *spiral oar* has been lately used by Mr. Boaz, of Glasgow, for the purpose of propelling boats, &c. and also to introduce hot air into a cold apartment.

OAT, or *Avena*, a genus of plants, consisting of thirty-four species, scattered over the globe; of which seven are indigenous to our own country. The *sativa*, or oat, uniformly cultivated in husbandry, is a native of Chili, and bears transplanting to most countries. Of this there are many varieties, as the white, black, brown, red, &c. The *nuda*, Naked oats, pilcorn or pills; the *elatior*, or Tall oat grass; the *fatua*, Bearded wild oats, hover or haver; the *pubescens*, Rough oat, downy oat, or hairy-oat grass; the *flavescens*, Yellow oat, or oat-grass, and the *pratensis*, Meadow oat, or narrow-leaved oat-grass, are all natives of this country, but may be rather considered as weeds than as deserving the attention of the agriculturist.

All the varieties of the first sort are sown during the months of February, March, or April, according to the season and climate. It is not often advisable, even in the southern districts of the kingdom, to sow this grain in Autumn, although it is sometimes done; but at no time with advantage in the northern. The largest grained sorts should be, in general, sown the earliest. This grain is hardy and may be cultivated upon almost any kind of soil; but it is the most productive on such as are strong, rich, and rather adhesive, and which have not been long broken up from the state of old grass. It succeeds well after almost every sort of grain and root crops, but should not be cultivated after wheat, rye, or barley, when it can be possibly avoided: nor should the same land be cropped with oats successively.

The land should be prepared for the reception of the seed exactly in the same way as directed under BARLEY.

The quantity of seed per acre must vary according to circumstances; on soils of a middling quality, four bushels per acre for the more early sowings, and five for the later ones, when sown broad cast, which they generally are, will be found sufficient. Sometimes, however, even eight bushels per acre have been sown with advantage; and Mr. Ducket has drilled five bushels per acre. Clover may sometimes also be sown with oats advantageously. The use of the drill has not been so much practised with this sort of crop as many others, but its utility in many cases cannot be doubted. It has also been occasionally dibbled with success.

The only attention necessary for this crop while growing, is to keep it clean from weeds; and sometimes to pass a light roller over the land when the plant is a few inches high.

Oat crops are ready for the scythe or sickle when the straw exhibits a yellowish cast, the grain becomes hard, and the chaff opens in such a manner as to render it in some degree naked. This sort of crop does not require to be so dry when put in the stack as either wheat or barley.

It is not in general advisable to feed this crop down in the spring with sheep, although it is sometimes done when it is very rank; or the worm is committing its ravages upon the plants.

Besides the oats above mentioned, several others are occasionally cultivated. Such are the Tartarian, the Poland, the Friesland, and the Churche's oat. The Potatoe oat has been much cultivated in the northern parts of the island, and is said to be productive and to afford much meal.

The *Stipiformis*, or Skegs, is another kind, which flourishes on the poorest soils, and is propagated by sowing only two bushels per acre. They are said to afford a sweet and wholesome food for horses and cows, especially when given together with the straw.

Oats furnish a stimulating food for various animals, and are consumed in large quantities by horses. When deprived of their husks, they are called *groats*, or *grits*, with which gruel is made, a useful dish on many occasions for the sick and diseased. Oatmeal also forms a considerable portion of the food of the Scotch, Welsh, &c. either by being converted into a kind of porridge, or into cakes; it also forms a useful suppurative poultice. According to Sir HUMPHRY DAVY, the proportion of the whole quantity of soluble matter in 1000 parts of oats from Scotland is 743; of these the mucilage or starch is 641; saccharine matter 15; albumen 87; whence it follows that oats are much less nutricious than either wheat, barley, or rye.

OATH, an affirmation or promise, accompanied with an invocation of God to witness what we say; and with an imprecation of his vengeance or a renunciation of his favour, if what we affirm be false or what we promise be not performed. Oaths, however, are wrong in principle, and should never be countenanced. The good man will not require such a process to impel him to speak the truth, and the bad man will not often be bound by it. On this subject we advise, and cannot too highly commend, the practice of the religious society of Friends, usually denominated Quakers, who never swear. We are aware, that as men are at present educated, and according to the usages of society, the administration of an oath to some persons may be expedient, but a different mode of education, as evinced in the society above alluded to, would render such expedience unnecessary.

OBSIDIAN, or ICELAND AGATE, a

siliceous earth or stone of a pure black colour passing into greenish, greyish, black, and various other shades. It is found in rough, roundish, detached pieces, internally more or less shining and vitreous. It is hard, but easily broken; melts before the blow pipe into a greyish white opake enamel. It is most probably a volcanic product, containing 78 per cent. of silica. It is found in the Lipari islands, near Sicily, in Hungary, in Italy, in Iceland; in Madagascar, Peru and Siberia. From its hardness and opake blackness, and the high polish of which it is susceptible, it is employed in various kinds of ornaments. It was used by the Peruvians for mirrors; and has been used in Europe as reflectors for telescopes. Its specific gravity is 2,34.

OBSTETRIC ART, the art of midwifery. See PARTURITION.

OBSTIPATION, costiveness. See COSTIVENESS.

OCCASION, in morals, that cause which immediately excites or produces an action, but which is not the chief cause. Many temptations to do wrong, are the occasions of the wrong, not the cause. The cause of wrong is frequently in the human mind itself, either undisciplined or improperly taught: under such circumstances, a temptation presented to it will excite the immorality, whereas, if well disciplined, it would produce no improper effect whatever. Hence the necessity of not only avoiding temptation, but also of so disciplining the mind that no temption may prevail. The occasion of good, and the temptation to, and the causes of good, admit of a similar explanation.

OCCIPITAL BONE, or *Os basilare*, in anatomy, the bone which forms the posterior and inferior part of the skull. See SKULL.

OCEAN, in geography, the vast collection of salt and navigable water which encompasses the whole globe of the earth. By computation, it appears that the ocean takes up considerably more of what we know of the terrestrial globe than the dry land. It takes different names, according to the countries on which it borders, as the German Ocean, the Atlantic Ocean, the Indian Ocean, &c.

The ocean has at all times been a subject of considerable surprize and wonder, not only on account of its greatness and extent, and the storms to which it is liable, but also in consequence of the innumerable tribes of fishes and other animals which it contains. A modern poet has happily described this stupendous mass of waters.

Thou trackless and immeasurable main!
On thee no record ever lived again,
To meet the hand that writ it: line nor lead
Hath ever fathomed thy profoundest deeps,
Where haply the huge monster swells and
sleeps,
King of his watery limit, who, 'tis said,
Can move the mighty ocean into storm.—
Oh wonderful thou art great element!
And fearful in thy spleeny humours bent,
And lovely in repose: thy summer form
Is beautiful, and when thy silver waves
Make music in earth's dark and winding caves,
I love to wander on thy pebbled beach,
Marking the sun light at the evening hour,
And hearken to the thoughts thy waters teach
—Eternity, eternity, and power.

PROCTOR'S *Marcian Colonna.*

OCHRE, an argillaceous earth of a red or yellow colour. It is usually an imperfect oxyd, or carbonate of iron. The ochres are principally used for pigments. See COLOURS.

OCHROMA, often denominated *Down-tree*, or *cork-tree*, a genus consisting of one species only, a West Indian tree, rising from twenty to forty feet high, with spreading, fragile branches, and large, scattered, rounded, and hearted leaves; flowers pale rufous; capsule a foot or more long, somewhat cylindrical, with five grooves, and ten angles; wool of the seeds, pale rufous. The wool or down is short, soft, silky, and sometimes used to stuff beds and pillows; but, like other vegetable downs, is apt to get into clots. The dried wood is so very light and buoyant, as to be used by the fishermen of Jamaica for their nets, instead of pieces of cork.

ODOMETER, an instrument for measuring the ground or distance passed over by a carriage. The best contrivance of this kind, is said to be the one invented by R. L. EDGWORTH, Esq. See PERAMBULATOR.

Odontalgia. See TOOTH-ACH.

Odontology. See TEETHING.

ODOUR, that property of bodies, by which they affect the sense of smell, whether in a pleasant or disagreeable manner.

It is pretty accurately ascertained, *that every species* of animal, as well as *of disease*, emits a peculiar odour, which can only be distinguished by the most refined sense. It appears also, that many animals have the faculty of distinguishing their peculiar odours to a surprising nicety; such is that of the dog following his master, &c. by the scent. The American Indians are also, it is said, endowed with peculiar powers of discrimination in this respect.

ŒDEMA, a term for anasarca. See ANASARCA.

ŒSOPHAGUS, or GULLET, the membranous and muscular tube, which descends from the back part of the mouth, or pharynx, to the stomach. It is composed of three membranes; and it is every where under the internal or mucous membrane, supplied with glands, that separate the mucus of the œsophagus, in order that the masticated food may pass readily down into the stomach.

The œsophagus is occasionally liable to a *disease*, which begins with a small impediment only in swallowing, and ultimately increases, till no food whatever can be got down. The cause is a thickening and contraction of this tube, so much as scarcely to admit the passage of a common probe. Mercury is the chief remedy to be relied on, in the removal of this complaint; and this should be given so as to bring on a gentle, but constant spitting.

When substances have stopped *between the mouth and stomach*, if they are of an alimentary, or harmless nature, they may be safely pushed down by means of a heated oiled wax-candle, to render it flexible, because the manner in which the obstruction is formed may often occasion death.

On the contrary, if the substances swallowed, are indigestible, such as pins, needles, pieces of bone, glass, buckles, or other pointed bodies, immediate attempts should be made, with the greatest care and gentleness, to extract them. When they have not descended too low, the fingers will frequently be sufficient to reach and withdraw them, but if they should be lower down, other means must be adopted. For this purpose, the most simple instrument is a crotchet, or a kind of hook, made of smooth and thin iron wire, by bending it into an oblong ring, and at one end reflecting the wire at the top, and forming a large handle. Or a piece of dry sponge, or tough meat, may be fastened to a fine silken or linen tape, so that after swallowing the sponge or meat, it may be again gradually extracted; thus pins, or sharp pieces of bone have been often removed without further inconvenience. In order to facilitate the operation, a little lukewarm milk or water should be given the patient before the string is withdrawn from the throat. Should none of these expedients answer, an emetic, consisting of half a drachm of powdered ipecacuanha, should be given at a draught; or, if the patient cannot swallow, vomiting should be excited by stimulating the throat with a feather dipped in sweet oil. Should this be ineffectual, a clyster, made by boiling one ounce of tobacco, in three quarters of a pint of water, and then straining, the decoction should be given in dangerous cases, by which vomiting may be produced, and the substance from the gullet discharged.

Any further process to be adopted, must be consigned to the hands of a skilful surgeon.

OIL, or *Oleum*, a kind of fat, for the most part liquid at common temperatures, insoluble in water, combustible with flame, and volatile in different degrees, and at different temperatures. Oils have been usually distinguished into fixed oils, and volatile, or essential oils.

Fixed oils are obtained by pressure, from various seeds, such as almonds, linseed, poppy-seed, &c., and from the olive. The specific gravity of the fixed oils is, usually, less than that of water;

they are viscid, and some of them congeal at a temperature not so low as that required to freeze water. A few of them are solid at the ordinary temperature: these have been called *vegetable butters.* They are, for the most part, sparingly soluble in alcohol and ether, although castor-oil dissolves in any quantity of these fluids.

The fixed oils cannot be volatilized without decomposition; which was not formerly supposed to take place, till they were heated to 600°, but some experiments which have been lately made, induce us to suppose, that, under certain circumstances, they will be decomposed before they arrive at so high a degree of heat.

Passed through a red- hot tube, the fixed oils furnish a very large proportion of carburetted hydrogen; when burned in the wicks of lamps, they suffer a similar decomposition, and water and carbonic acid, are the products of their combustion.

The greater number of fixed oils undergo little change by exposure to air, except becoming more viscid, and acquiring a degree of rancidity. A few, such as linseed and nut-oil, become covered with a pellicle, and when thinly spread upon a surface, become hard and tough; these are termed *drying* oils: their drying quality is much improved, by boiling them upon a small quantity of litharge.

The alkalis combine with the fixed oils and form soaps. See SOAP. The fixed oils readily combine with oxide of lead, when aided by heat, forming the compound usually termed plaster. See PLASTER.

The fat of animals when freed by fusion or pressure from the cellular membrane, is of various degrees of consistency, and is either called tallow, lard, suet, or oil. The animal oils known in commerce, are chiefly obtained from fishes, such as whale-oil, cod-oil, pilchard oil, &c. These oils appear to possess many properties in common with the fixed vegetable oils; they are convertible with alkalies, into soap, and they may be decomposed for the purpose of giving light. It was, till lately, supposed that these oils also, could not be decomposed till they were heated to 600°; but, on a recent trial, relative to the recovery of a large sum of money from one of the insurance offices in London, for a loss by fire in a sugar-house, where the sugar was refined by passing heated fish-oils in pipes through the sugar, it appears, by various experiments made by Messrs. BRANDE, ACCUM, PARKES, &c. &c., that at 340°, inflammable gases are produced from it; and also that old oil will be decomposed at a lower temperature than new: that, in fact, from 344°, through all the intermediate degrees of heat, to 600°, whale oil yielded more or less inflammable gas. It appears, too, that long-continued boiling, causes the oil to be more readily decomposed at lower temperatures. These experiments, however, require farther confirmation. See CARBURETTED HYDROGEN

Volatile, or *essential oils*, are generally obtained by distilling the various vegetable substances which afford them, with water. They vary considerably in their specific gravity: the oils of cinnamon, cloves, sassafras, and a few others, are heavier than water, and consequently sink in that fluid, but the greater number of essential oils are lighter than water.

The volatile oils have a penetrating odour and taste; they are for the most part, readily soluble in alcohol, and very sparingly soluble in water; their solution constitutes perfumed *essences* and distilled waters.

They pass into vapour at a temperature somewhat below that of boiling water. They are very inflammable; water and carbonic acid are the results of their perfect combustion. Many of these oils, as cinnamon, rhodium, &c. bear a very high price. They are often adulterated with alcohol and the fixed oils. The former is rendered evident by the addition of water; the latter by the greasy spot which they leave on paper, and which does not evaporate when gently heated. See BAY; and also ALMONDS, LINSEED, &c. &c.

OIL-CLOTH, linen cloth, or canvas, painted either plainly or ornamentally.

The following is said to be the best method of laying on plain colours for common purposes, on canvas, &c. Grind 96lbs. of English ochre, with boiled oil, and add 16lbs. of black paint; this mixture will form an indifferent black. Then let one pound of yellow soap, dissolved in six pints of water over the fire, be mixed while hot with the paint. This composition is to be laid on the canvas, without its being wetted, as is usual, as stiff as it can conveniently be done with the brush, so as to form a smooth surface. The next day, or, still better the second day, a second coat of ochre and black, without any, or but a very small portion of soap, is to be laid on; allowing this coat an intermediate day for drying; the canvas may be finished with black, or any other colour paint. The addition of the soap prevents the dried paint from cracking, and preserves the cloth pliant and supple.

OINTMENT, in pharmacy, a preparation of several unctuous and other matters, usually about the consistence of butter. Ointments are most commonly applied to various wounds and ulcers on the surface of the body. The following are the most useful ointments.

For various *Basilicon* ointments, see BASILICON.

For *blister ointment*, see BLISTER.

Ointment of carbonate of lead: take of simple ointment (see below) five parts, of carbonate of lead one part; rub them together.

Ointment of elder. See ELDER.

Ointment of elemi. See ELEMI.

Ointment of galls: take of galls in fine powder one part; of lard eight parts; mix them.

Strong mercurial ointment: take of quicksilver two ounces; of lard fifteen drachms; of suet one drachm. First rub the quicksilver with the suet and a little of the lard until the globules disappear; then add the lard and mix.

Milder mercurial ointment: take of the stronger mercurial ointment one ounce; of lard two ounces; mix them.

Ointment of nitrate of mercury: take of quicksilver one ounce; of nitric acid eleven fluidrachms; of lard six ounces; of olive oil four fluidounces. First dissolve the quicksilver in the acid; then mix the solution, while it is hot, with the lard and oil melted together.

Ointment of nitric oxide of mercury: take of nitric oxide of mercury one ounce; of white wax two ounces; of lard six ounces; melt together the wax and lard, then add to the mixture the nitric oxide of mercury, previously rubbed into a very fine powder, and mix.

Ointment of savin. See BLISTER PERPETUAL.

Simple ointment. take of olive oil five parts; white wax two parts. Melt the wax in the oil; then stir the mixture till it is nearly cold.

Ointment of sulphur. See ITCH.

Ointment of tar. See TAR.

Ointment of zinc: take of oxide of zinc one ounce; lard six ounces. Mix them.

The *ointment of carbonate of lead* is a useful cooling ointment, chiefly for burns. The *ointment of galls* is a very useful application to piles. The *strong mercurial ointment* is commonly used for exciting salivations, and for introducing a large quantity of oxide of mercury into the system. The usual method is to rub about one drachm upon the inside of the thighs, or any other part of the body where the cuticle is thin, every night and morning until the system is affected. In order, however, to produce the full effect of the friction, it must be continued until every particle of the ointment disappears; and the operation should be performed by the patient. In this form it operates as an antisyphilitic, a deobstruent in complaints of the liver, and to excite the absorbents in hydrocephalus. The *milder mercurial ointment* is used chiefly as a topical dressing to venereal sores. It is also used by the vulgar to destroy those troublesome animals which infest the human hair, &c. *Ointment of nitrate of mercury* is stimulant and detergent. When diluted with three times its weight of lard, it is a local remedy of great efficacy in herpetic eruptions, scald head, and other cutaneous diseases. It is also, when thus diluted, useful in some ulcerations of the eyelids. It is used by taking a little on the top of the finger, liquifying it by the fire or the flame of a candle, and applying it along the inner part of the eyelids. The *ointment of nitric oxide of mercury* is an excellent stimulant to foul ulcers. It is also very useful in some complaints of the eyes, such as inflammation of the conjunctiva, and specks of the cornea. It is to be applied the same as the preceding. This last is supposed to form the ointment known by the name of *Singleton's ointment. Simple ointment* is useful for softening the skin, and excluding the air from excoriated surfaces. The *ointment of zinc* is useful in chronic inflammation of the eyes, and also for sore nipples, and ring worms.

Old age. See AGE, LIFE, and LONGEVITY.

Old maid. See RAY.

Old wife. See WRASSE.

Oleander. See ROSE-BAY.

OLEASTER, WILD OLIVE, or *Elæagnus,* a genus of plants, consisting of ten species, one or two from the South of Europe, the rest from India. Those most frequently cultivated in this country are, the *orientalis,* with oblong, ovate, opake leaves, and small flowers, yellowish on the inside, and when fully blown not unpleasantly scented. The *angustifolia,* with lanceolate leaves, silvery white underneath; it is sometimes a thorny tree, very beautiful both in leaves and flowers, and chiefly cultivated in gardens. The *latifolia,* with ovate, alternate leaves, elegantly silvered and variegated with dark-coloured spots, is a native of Ceylon. This last species is too tender to bear the climate of this country, and is, therefore, always a greenhouse, or stove plant. The former two species are best propagated by laying down the young shoots in autumn; in a year afterwards they may be separated from the parent stock.

OLECRANON, the elbow, or head of the ulna, one of the bones of the arm.

OLEFIANT GAS, a gas which may be made by mixing together equal volumes of chlorine and carburetted hydrogen in an exhausted vessel or over water, when the gases acting slowly upon each other combine and form this peculiar fluid. It is transparent and colourless; its taste sweet and somewhat acrid; its specific gravity is 1,2; from its appearing like a heavy oil, it has been denominated olefiant gas. It boils at 152°. It burns with a green flame, evolving muriatic acid, and largely depositing charcoal. See CARBURETTED HYDROGEN.

OLIBANUM, a resinous substance of a yellowish colour, obtained, some think, from a species of juniper, in large tears or drops, but by the most recent information, it is probably the product of the *Boswelliă serrata,* a native of the mountains of India, whence, as well as from the Levant, olibanum is brought: but the Indian olibanum is not much esteemed. Olibanum appears to be of similar nature to the turpentines, but its smell is more agreeable. It was formerly used in affections of the chest, and externally as a vulnerary; but it is now employed only as a perfume in sick rooms; it has been by some considered as the frankinscence of the ancients. The dose, when taken internally, was from 10 grains to half a drachm.

OLIVE, or *Olea,* in botany, a genus of trees, consisting of seven species, scattered over the different quarters of the globe. The following are the species chiefly cultivated:

The *Europæa,* or European olive, an evergreen tree, rarely exceeding twenty feet in height, common to the woods of the South of France, Spain, and Italy, with lanceolate, very entire, grey, ferruginous leaves, downy or silvery underneath; the flowers are small, white; fruit a superior berried drupe, of an oblong form and of a yellowish green colour, turning black when ripe. A great many varieties and sub-varieties. With a little protection in severe frost, it may be maintained against walls in the neighbourhood of London; and in Devonshire it will grow as a standard in more open situations, and is seldom inured by the frosts; but we have not warmth enough in this climate to bring the fruit to perfection. The olive abroad is easily propagable by shoots; but the best bearing trees are reared from grafts on the stocks of olives of an inferior kind; the shoots are grafted when in flower. In England the olive is propagated by layers alone.

Olives have an acrid, bitter, and extremely unpleasant taste. They are brought pickled into this country and eaten as a condiment; and long habit will reconcile us to the taste of them; but they are neither good nor wholesome food.

The most valuable part of the olive is its oil, which is obtained by expression from the ripe fruit, previously bruised under a mill-stone. The olives for this purpose are gathered in November and December.

The *Capensis*, or Cape olive, is a shrub with ovate, entire leaves, and white flowers, appearing in June and July.

The *Americana*, or American olive, has lanceolate, elliptic, very entire, evergreen leaves. Male and female flowers on the same plant with hermaphrodites.

The *Fragrans*, or Scented olive, is a large tree of Japan, very fragrant.

Olive oil is too well known to need description. Several kinds of it are found in the shops; that called *Florence*, or *Lucca oil*, is esteemed the best. An inferior kind is called *Genoa oil*, and a still worse sort, having a very unpleasant smell, is called *Gallipoli oil*. For food the two first kinds are most commonly used; but for every purpose of medicine, fresh, sweet, Genoa oil, appears to be equally good.

As food, this oil is of similar importance with many other of the animal and vegetable oils or fats. In moderate quantity it may suit the stomach of the strong and healthy, but it is generally improper for the valetudinarian and the dyspeptic.

Olive oil is extensively used for various purposes in the arts. It forms with the alkalies an excellent soap.

It has been hinted that much of the oil consumed in Europe under the name of olive oil, is not in fact the produce of the olive, but of the seeds of the single white poppy. See POPPY.

In medicine this oil is demulcent, relaxant, and slightly laxative. It is sometimes given internally as a demulcent in catarrh, and other pulmonary affections, diffused in water by means of mucilage, but its efficacy in these complaints is extremely questionable. It is given with advantage in large quantities, to mitigate the action of acrid substances and some poisons taken into the stomach, and in cases of worms. But its chief use is external application. It is used, rubbed on the skin, in plague; (see PLAGUE,) and it is an ingredient in various ointments, cerates, and plasters; it is also used as an injection in gonorrhœa; and in clysters. The dose of this oil is from one fluidrachm to an ounce, rubbed with mucilage, or mixed with water, by means of a few drops of solution of potash; in poisons or worms, as much may be given as the stomach can bear.

OLIVE BARK TREE, or *Bucida*, a genus, consisting of two species, having a one-seeded berry: the *capitata*, a native of Montserrat; and the *bucera*, a native of Jamaica.

Olive, the spurge. See MEZEREON.

Olive, the wild. See OLEASTER.

OLIVE, THE WILD OF BARBADOES, or *Bontia*, a genus, consisting of one species only, the *daphnoides*, with a yellow cord; it is generally cultivated in Barbadoes for hedges and other fences, being of rapid growth, and soon attaining its natural height, about ten feet.

OLIVINE, or *Olivinus*, in mineralogy, a genus of the class earths, order siliceous, consisting of the greater part silica, and a smaller proportion of alumina and oxide of iron; found in basalts, shining internally, generally of a common form, mouldering in the air and melting with difficulty. Four species have been described: Olivine, or olive chrysolite;—Hyalite, or muller's glass;—Bastard feldspar;—and another diaphanous, white, fibrous and shining. Specific gravity varying from 2,110 to 3,225.

OMENTUM, or **Caul**, is a fatty membranous viscus of the abdomen that is attached to the stomach, and lies on the anterior surface of the intestines; it is thin, and easily torn, being formed of a duplicature of the peritonæum, with more or less fat interposed. It is distinguished into the great and little omentum. The omentum is always double, and between its lamellæ, closely connected with very tender cellular substance, the vessels are distributed and the fat collected. It appears, therefore something like net-work.

Its use is to lubricate the intestines, that they may the better perform the peristaltic motion.

ONCH, or *Onchidium*, is a genus of worms consisting of one species only, the *typhæ*, inhabiting Bengal, on the leaves of the *typha elephantina;* it is about an inch long; in appearance it very much resembles a slug.

ONION, or *Allium cepa*, a species of garlic, but a native of what country is not certainly known. It is a biennial plant.

The onion is principally known as a warm esculent, prepared and eaten in various ways, and also in its crude state. There are several varieties of this plant: the Strasburgh, the Spanish, and Egyptian onion. It is propagated by seed, which ought to be sown towards the end of February or early in March, during dry weather, in the proportion of six pounds of seed per acre. In the course of six weeks they will appear above the ground; and in a month after, in a good soil, they will admit of being hoed, which operation must be performed with a small implement not exceeding 2½ inches in breadth; it will be also necessary to remove such as may stand too closely together, so as to leave the rest about three inches asunder. At the expiration of another month the hoeing should be repeated, and the plants left four or five inches apart; in the course of six weeks the hoe is once more employed. Towards the middle of August they generally cease to grow, which may be ascertained by the shrinking of the blades. They should now be drawn out of the earth, the tops of the blades cut off, and the bulbs dried, either in the sun, or a warm place. This mode of cultivation is also applicable to the Leek; but leeks should be always retained in the earth, and not dried as the onion. To obtain the seeds, both onions and leeks of the first year should be planted in the spring in rows, at about three feet distance, and as they grow up with heads they should be kept steady by stakes and cords to prevent their being broken by the winds.

As food, onions only agree with certain constitutions, and are, upon the whole, not to be recommended. As medicine, they are used occasionally as a stimulating poultice, and are sometimes of service when roasted and applied to abscesses of the ear; but their medicinal virtues are not of much importance.

Onion, the sea. See Squill.

ONYX, a precious stone of different colours, chiefly blueish white, with brown and white zones. It is a species of chalcedony.

ONYX, in surgery, an abscess or collection of pus between the lamellæ of the cornea of the eye. It appears like a white spot, soft and fluctuating. It may be sometimes cured by astringent collyriums. It is often succeeded by an imperfection in the sight. See Eye.

Oolite. See Lime.

OPAL, one of the most beautiful productions of the mineral world; it is a compound of about 90 of silica and 10 of water, and is distinguished by its very brilliant display of colour. The finest specimens come exclusively from Hungary. There is a variety called *Hydrophane*, which is white and opake till immersed in water; it then resembles the former. *Common opal* is usually of a dirty white, and does not exhibit the colours of the noble opal. The substance called *Menilite*, from Menil Montant, near Paris, is nearly allied to common opal. It is found in irregular masses in beds of clay.

OPATRUM, a genus of insects, consisting of twenty-eight species, scattered over the globe, of which the *sabulosum*, brown, having shells with three indented raised lines, is indigenous to this country, and found on sand. This species is also common to Europe and to America.

Opera. See THEATRE.

OPHIDIUM, a genus of fishes comprehending four species as follow; the *barbatum*, or Bearded ophidium, is about twelve or fourteen inches long; inhabits the Mediterranean and Adriatic seas, and our own coasts. The *unbarba*, or Beardless ophidium, inhabits the European seas, and is found on our own coasts. The *viride*, or Green ophidium, inhabits the Greenland seas; flesh eatable. The *aculentum*, or Prickly ophidium, inhabits the fresh waters of India; from six to eight inches long; esculent.

OPHTHALMIA, or INFLAMMATION OF THE EYES, is distinguished by redness, heat, pain, and tension of the parts, accompanied with intolerance of light, and effusion of tears.

The cure of this complaint must be effected by bleeding, spare diet, keeping the eyes covered from the immediate contact of light, rest, and also purging, or at least by keeping the bowels somewhat relaxed. Leeches applied to the temples, or external angle of the eye, are also of service; so are blisters near the part, which should be kept open with some stimulating ointment, such as savine; or cupping glasses may be applied between the shoulders. Snuffs which produce considerable discharge from the nose are also of service.

Topical applications, where the ophthalmia is local, without a corresponding disorder of the system, may be of service. Take of solution of acetate of ammonia and rose water, of each equal parts; mix them for a lotion, to be applied several times a day, by dipping bits of fine linen rag in the medicine, and laying them on the eye, so that it may be well bathed with it. In some cases the solution of acetate of ammonia may be used undiluted.

The following is also a very common, and often a very useful lotion for inflamed eyes: Take of distilled water four ounces; of solution of subacetate of lead (Goulard's extract) ten drops; mix them. Ten grains of sulphate of zinc, dissolved in two ounces of distilled water, is sometimes also of great service in chronic inflammation of the eyes. A drop or two of tincture of opium dropped into the eye once a day is sometimes of the greatest service, and often gives immediate relief after other remedies have been tried in vain.

The slighter kinds of inflammation, from dust, or the sun, may be removed by fomenting with warm milk and water, and by anointing the eye-lids with ointment of zinc.

In order to prevent the glueing together of the eye-lids, which often happens in this complaint during sleep, a little lard, or mild unctuous liniment, should be insinuated between them before the patient goes to sleep.

In violent pains it is often of service to foment the part frequently, with a decoction of white poppy heads. It cannot be sufficiently impressed upon the patient that all strong light is exceedingly injurious to inflamed eyes; and that all reading, and especially reading by candle light, should be carefully avoided.

One of the most common and disagreeable consequences of ophthalmia, is an offuscation of the cornea, so far obstructing the passage of light as to diminish or prevent vision. This is sometimes to be removed only by an operation, which is, of course, the province of the surgeon; but in slighter cases it may be often removed by the application of gentle escharotics; and in this way, with little inconvenience, good effects are often obtained by gently introducing into the eye, at bed-time, a little calomel, powdered sugar, or the following liniment: Take of white sugar-candy, and of the soft part of cuttle-fish bone, of each, finely powdered, one drachm; of calomel one scruple; of honey of roses two ounces. Mix them together.

We cannot conclude this article without cautioning our readers in the application of all these medicines. The eye is a very delicate organ, and no medicine should be heedlessly or unadvisedly applied to it; indeed, in all cases of moment, an experienced medical practitioner ought to be consulted. See EYE, and GUTTA SERENA.

It is said that some kinds of ophthalmia are contagious, but we are not aware that the ophthalmia occurring in this country ever becomes so.

OPIUM, an inspissated juice obtained from the capsules of the *Papaver somniferum*, or Single white poppy. It has latterly been collected with some success in this country. See POPPY.

Opium is brought into this country from Turkey and India. The Turkey opium, which is by far the best, is in lumps of different sizes and shapes, usually about half a pound each; it is covered with leaves, and the reddish capsules of some species of rumex, which is considered as an indication of its goodness, as the inferior kinds of opium have none of these capsules adhering to them. It has a peculiar, strong, heavy, narcotic odour, similar to that which the inspissated juice of many kinds of garden poppies yield when the capsules have been wounded in the summer, and the juice suffered to remain upon them; its taste is bitter, accompanied with an acrid heat, its colour is a dark reddish brown; when soft it is tenacious, but when hard it breaks with a shining fracture, and affords a dull yellowish powder. The narcotic properties of opium reside in a substance which has been lately separated from it, called MORPHIA, which see.

Opium operates as a powerful and very diffusible stimulus, but its primary operation is soon followed by narcotic and sedative effects, in a much greater degree than could be expected from the previous excitement which it induces. It acts directly on the nervous system, and, when taken into the stomach, exhausts the irritability, and allays pain in the most distant parts of the body, independently of the circulation, and without inducing any change in the composition of the blood. As the principle of its action is the same all over the body, the topical application of it is capable of producing similar effects, only in a diminished degree, to those resulting from it when taken into the stomach. The larger the dose is, the more quickly its primary action is extended over the whole habit. In moderate doses it increases the fulness, force, and frequency of the pulse, augments the heat of the body, invigorates both the corporeal and mental functions, exhilarating even to intoxication; but, by degrees, these effects are succeeded by languor, lassitude, and sleep; and in many instances head ach, sickness, thirst, tremors, and other symptoms of debility, such as occur from the excessive use of ardent spirits, follow. In very large doses the primary excitement is scarcely apparent, but the pulse is at once diminished; drowsiness and stupor immediately come on, followed by delirium, sighing, deep and stentorious breathing, cold sweats, convulsions, apoplexy, and death.

It is efficaciously given in many diseases of debility, such as typhous fevers and intermittents: it should, however, not be given in such complaints when the heat of the body is much above the natural standard, and the skin dry; but, if moisture be coming on, opium accelerates it, and tranquillity and sleep follow. It is hurtful also where there is any disposition to local inflammation, particularly of the chest, and where there is much determination to the head. It materially assists the bark in curing intermittents, and prevents it from running of by stool.

In acute rheumatism it is given united with ipecacuanha, or antimonials and nitre, and always relieves when it produces perspiration. And in eruptive diseases, where the fever assumes a typhous appearance, it is found highly beneficial. It is also advantageously employed in hæmorrhages, where the pulse is weak, languid, and intermitting. In many old and obstinate coughs, its effects are good; and in diarrhœa, and dysentery, it is often employed with great success. In spasmodic and convulsive diseases of almost all kinds, in tetanus, spasmodic asthma, &c.; in short, in all cases where the irritability is morbidly increased, and where it is of importance to lessen pain, and procure sleep, this powerful drug is undoubtedly the most valuable article of the materia medica.

But it is injurions in all morbid states of the body, where a strong inflammatory diathesis exists; in pulmonary affections, when the cough is dry and hard, and the expectoration difficult and scanty. And, in many cases of mania, instead of procuring sleep, it produces restlessness.

Externally used, it is often greatly efficacious. It is applied in the form of frictions, either combined with oil, with the camphor liniment, or in the form of tincture: thus applied, it may be used in all the diseases above mentioned. It is also useful in colic, and in locked jaw, when rubbed on the parts affected. A piece of solid opium stuffed into a hollow tooth, will sometimes relieve the tooth-ach, although it is generally more efficacious in the relief of the pain, when taken into the stomach in small doses, such as ten, fifteen, or twenty drops of the tincture. It is also found efficacious in various other complaints which we cannot enumerate here, and its application to which must be left in some degree to the judgment of the reader, although we cannot too strongly caution him in the use of this most potent and valuable medicine.

It is given either in substance as a pill, or in the form of tincture. It should not be given with solutions of oxymuriate of mercury, acetate of lead, the sulphates of zinc, iron, or copper; of the carbonates, of alkalies, lime-water, infusion of galls, or infusion of yellow bark, as these substances either decompose it, or injure its efficacy. In combination with vinegar, the vegetable acids and oils, its narcotic power is much increased.

The dose of opium varies according to the nature of the disease, and the peculiar intention for which it is ordered. The circumstance of the patient having been previously accustomed to its use must also regulate the dose: for in this case, a dose, which to one unaccustomed to it would prove fatal, may perhaps, to another, in the habit of taking it, be scarcely sufficient to produce its narcotic effect. A quarter of a grain, or even less, frequently repeated, is, in general, sufficient to keep up its stimulant effect; and a dose from one grain to two, acts as a narcotic, and produces sleep; one grain, however, is generally considered a full dose. But, in tetanus, hydrophobia, and some other diseases, the quantity for a dose has been often prodigiously increased.

The habitual use of opium cannot be too much reprobated. It impairs the digestive organs, consequently the vigour of the whole body, and gradually the mental energies, so that those who indulge in its use, become sottish, prematurely old, and imbecile. See HUNGER.

Opium enters into various forms in the pharmacopœias. See CAMPHOR, CONFECTION, IPECACUANHA, &c.

The most useful and convenient, is the *Tincture of opium*, called also *laudanum*, which is made thus: Take of hard opium powdered two ounces and a half; of proof spirit two pints. Macerate for fourteen days and strain. Of this tincture, nineteen minims, or drops, contain one grain of opium. The usual dose is, from ten drops to forty; but in some particular diseases, and states of the body, larger doses can be borne, and are necessary.

Although opium, given to horses, will occasion heaviness, sleepiness, and, in large doses, delirium, it is not so efficacious as an anodyne: but it is, nevertheless, a useful tonic medicine in colic, and other complaints.

For the mode of treatment of those who have taken opium improperly, or as a poison, see POISONS.

Opodeldoc. See LINIMENT.

Opodeldoc, Steers'. See STEERS' OPODELDOC.

OPOPONAX, a gum resin, obtained from a species of *pastinaca*, or parsnip, growing in the Levant. It is in tears, or irregular lumps, of a reddish, yellow colour, having a strong, disagreeable smell, and a bitter acrid taste.

It is considered as antispasmodic and emmenagogue, and as such, has been given in hysteria and chlorosis, but it is not often prescribed. The dose is from ten grains to half a drachm.

OPOSSUM, or *Didelphis*, a genus of animals consisting of nineteen species, omitting the two species of kangaroo, which have characters sufficiently distinct to entitle them to be considered as a separate genus. This tribe is chiefly found in America; it lives in holes in woody places, burrowing in the earth, and climbing trees by means of its prehensile tail; they move slowly; feed on birds, insects, and vegetables. Females have one, two, or three abdominal pouches, which can be opened or shut at pleasure, in which the young are hid in time of danger, and which are sometimes found in the males. The following are the species chiefly deserving notice:

The *Opossum*, or Virginian opossum. Two varieties. Both have from five to seven teats. General size, rather smaller than a common cat; measures, in general, from sixteen to twenty inches, from the tip of the nose to the tail; has a disagreeable smell, and a grunting squeak in its voice. It is said that this species go with young from twenty-two to twenty-six days; that the young animal, in a very minute state, is then by some means not known, conveyed from the uterus to the pouch, and in that adheres to an appropriate teat; where it continues about fifty days before it becomes of the size of a house mouse, and it is able to quit, occasionally, its abode: and that while this kind of gestation is going on, a second uterine gestation is proceeding at the same time.

The *Philander*, or Brazil opossum, inhabits South America; nine inches long; tail fourteen. The *marsupialis*, or Amboyna opossum, is the size of a cat, and inhabits Amboyna; the flesh is said to be pleasant. The *marina*, or Marmose, has a fold including the teats, but no pouch; six inches long; inhabits South America. The *cayopollin*, or Mexican opossum, is another of the few pouchless species; lives in trees, in which it brings forth its young, who cling close to the dam when alarmed. The *dorsigera*, or Merian opossum, so named from Madam Merian, who has introduced a figure of it in her splendid work on the insects of Surinam. Size of a rat; pouchless; the young adhere to the mother, by twisting their tails round her. The *cancrivora*, or Cayenne opossum, feeds on crabs, grunts like a pig; grows fat; easily tamed; flesh good, resembling hare. The *orientalis*, or Phalanger, inhabits the Molucca islands; resembles the squirrel in voice and manner of eating. The *volans*, Pentaurus, or Flying opossum, has a broad hairy membrane, extending from the middle of the fore legs, to the first joint of the hind legs, not including the tail; inhabits Australasia; body twenty inches long; tail twenty-two; its general appearance like the flying squirrel; its size, colour, and form, conspire to render it one of the most beautiful of quadrupeds. The *sciurea*, or Squirrel opossum, has a lateral flying membrane; body grey above, snowy beneath. Inhabits Australasia; torpid by day, active by night; a very elegant quadruped.

ORACHE, a term given to plants of different genera. For *stinking orache*, see GOOSE FOOT. For another orache, see PURSLANE, THE SEA.

ORANGE-TREE, or *Citrus aurantium*. The varieties of this valuable tree, and the mode of its propagation, are described under the article CITRON, to which, therefore, we refer.

Although the orange-tree is a native only of India and Persia, it is now abundantly propagated in the South of Europe, and the West Indian islands, and is also found in our green-houses. In its general appearance it resembles the lemon-tree, but the leaves, which are not so large, and more pointed, are entire, smooth, and furnished with wings or appendages, on the footstalk, by which it is particularly distinguished. The flowers, like those of the lemon, appear all the summer, are large, white, odorous, and arise from the smaller branches. The fruit is a globular berry, rough, and of a deep reddish yellow, or orange-colour; it is internally divided into nine cells, filled with a vesicular pulp, and each containing from two to four seeds. The rind, like the lemon, is double, and contains in its exterior part an abundance of an aromatic essential oil, of an exceedingly pleasant smell. The China, or sweet orange, is a variety of the same species as the Seville orange. The juices of both are pleasant acids, and form, in a variety of febrile diseases, useful acidulated drinks. The juice of the last consists nearly of the same principles as the juice of lemons. The *exterior rind* has a warm bitter taste, depending on the essential oil contained in it. The *unripe fruit* named Curaçoa oranges, have the aromatic flavour of the rind, with a greater degree of bitterness, and retain both when dried. They vary in size from that of a small pea to that of an acorn.

The juice of the Seville orange is employed in the same diseases, and with the same intentions, as lemon juice, but it is not so generally used. The rind is a useful stomachic, carminative, and tonic, and is a common addition to bitter infusions in dyspepsia, &c. It is also occasionally joined with the bark. See PERUVIAN BARK. The oil is only used as a perfume. The dried unripe fruit, is chiefly used for issue peas; and is preferred on account of its odour only, for it swells in the issue, as much as the common pea, and therefore requires to be renewed once in twenty-four hours. The usual dose of the dried rind, and of the Curaçoa orange, is from fifteen grains to one drachm, three or four times a day. The *exterior* part only of the rind of the Seville orange, should be used; and no other but Seville orange-peel is commonly used medicinally.

The following preparations are ordered by the London College:

Compound Infusion of Orange-Peel. Take of dried orange-peel two drachms; of fresh lemon-peel, one drachm; of cloves bruised half a drachm; boiling water half a pint. Macerate for fifteen minutes in a lighly covered vessel and strain.

This is a grateful stomachic. The dose may be from one fluidounce to four, given twice or thrice a day.

Tincture of Orange-peel. Take of fresh orange-peel three ounces; of proof spirit two pints. Macerate for fourteen days and filter. This is also a grateful stomachic; and an agreeable addition to infusions and decoctions, in dyspepsia; &c. when given alone, which it rarely is, the dose is from half a fluidrachm to two fluidrachms.

Syrup of Orange-peel. Take of fresh orange-peel, two ounces; of boiling water one pint; refined sugar three pounds. Macerate the bark in the water for twelve hours, in a covered vessel; then pour off the liquor and add the sugar.

For *Conserve of orange-peel,* see CONSERVE.

Orange, the *musck.* See SYRINGA

Orange, the *Shaddock.* See CITRON.

Oratory. See ELOQUENCE.

Orchall. See LITMUS and LIVERWORT.

ORCHARD, an inclosed portion of land, in which different sorts of fruit-trees are planted. The term is chiefly applied to that in which apples, pears, or cherries, grow.

The situations and kinds of land proper for orchards are of some importance. It may be laid down as an invariable rule in this country, that no orchards should be planted on the north, or north-eastern side of high hills, nor on declivities sloping to the north, for although fruit is occasionally produced in such situations, the probabilities are considerably against it. Nor is the north-western declivity by any means desirable. Every point from east to west, will be found good; but steep declivities and elevated situations, even in any of these points, unless under very peculiar circumstances, are generally improper, in consequence, most probably, of their extreme dryness, and shallowness of soil. A gentle inclination to the south, or which are best of all, deep bottoms, are the situations for orchards. It is said, also, that a clayey soil is to be preferred to that of gravel; but provided the surface soil be good, and of tolerable depth, that is, from one to two feet, or more, we do not think this consideration is of much consequence.

In planting an orchard, it is most advisable to plant the young trees in regular rows, and at about forty feet apart. But the distance must be regulated by the kind of trees, and the situation. It is upon the whole, perhaps, most advisable to plant every sort of fruit-trees usually grown in orchards, late in the autumn, provided the weather be open; but they are nevertheless very commonly planted in the spring. It is also usual to plough the land for different crops, for some years after the orchard is planted, but this may be, and very often is, continued too long.

The trees planted in orchards should be of the standard kind; the most common are apple-trees, pear-trees, plumb-trees, and cherry-trees: but to render the orchard more complete, quinces, medlars, mulberries, service-trees, filberts, spanish-nuts, barberries, walnuts, and chesnuts, may be added in numbers according to the wants or inclination of the owner. The last two sorts are well adapted for sheltering the rest from high winds, and therefore they are most advantageously planted on the northern or north-eastern boundaries for that purpose.

In providing trees, especially of the apple kind, (see APPLE) too much care cannot be taken to admit none but such as are good sorts, fair clean stems, and proper heads: and at the same time, attention should be paid that a proper assortment of the different kinds be planted, which will supply the table during the whole year. A few of the summer sorts are sufficient, but there should be a larger allotment of the autumn, and a still larger quantity of the winter kind. In planting an orchard, great care should be taken that the soil is suitable to the trees, to be planted in it; and that they are procured from a soil of nearly the same kind, or rather poorer than that of the land intended to be planted to an orchard. If the ground have been pasture, the green sward should be ploughed before the trees are planted; and if it be suffered to lie a summer fallow, it will greatly mend it, provided it be stirred two or three times to rot the grass and prevent the growth of weeds. At Michaelmas, it should be ploughed deep, in order to make it loose for the roots of the trees; which, if the soil be dry, should be planted in October; but if it be moist, the beginning of March will be often a better season.

When the trees are planted, they must be supported by stakes to prevent their being injured by the wind; and in the following spring it is advisable, if the season prove dry, to cut a quantity of green turf, and lay it about the roots with the grass downwards, by which means a great expense of watering will be saved, and after the first year they will be out of danger.

For the culture and management of the various sorts of fruit-trees, see APPLE, CHERRY, PEAR, PLUM, &c. and also BUDDING, GRAFTING, PRUNING, &c. in the order of the alphabet.

ORCHIS, or FOOL'S STONES, a genus of plants, comprehending forty-nine species, scattered over the globe, of which nine are common to our own country. They may be thus subdivided: helmet of the corol spurred;—bulbs undivided;—bulbs palmate;—bulbs fascicled;—bulbs not yet ascertained. The following are those chiefly cultivated:

The *bifolia*, or Butterfly orchis; the *murio*, or Female orchis; the *mascula*, Male, or early-spotted orchis; the *militans*, or Man orchis; the *latifolia*, Broad-leaved, or marsh orchis; the *maculata*, or Spotted orchis; the *conopsea*, or Long-spurred orchis; the *abortiva*, Purple bird's nest, or bird's nest orchis.

The first is found in the groves of our own country, with undivided bulb; lip of the nectary lanceolate, quite entire; spur very long, lateral petals spreading. The second has also undivided bulbs, and connivant, many-seeded petals. It is from the roots of this species that the salep of the shops is obtained, see SALEP; the third, called sometimes *satyrion*, was formerly in the pharmacopœia on account of its slimy juice.

All the species are hardy perennials. The flowers appear in May, June, and July, but June principally. The uniform mode of flowering is in spikes; many flowers in each nectary; and each flower composed of five petals, in two series and a nectary. The season for removing them is in the summer, after they have done flowering, when their leaves and stalks decay; they should be planted three inches deep, and remain undisturbed for several years: for the less they are removed the stronger they will blossom.

Order. See METHOD.

ORE, in mineralogy, a body composed entirely of some metal, or of which metal constitutes the most considerable and important part. It is from the minerals belonging to this class that all metals are extracted. Metals exist in ore in one or other of the following states: a metallic state, either solitary or combined with each other, or forming alloys;—combined with sulphur, forming sulphurets;—combined with oxygen, forming oxides;—combined with acids, forming carbonates, phosphates, &c. which generally pass under the name of metallic salts.

The ores of metals may be analyzed in two modes:—the humid and the dry way. The first is effected by the aid of acids and of other liquid agents, and may be often accomplished by very simple means, and without the aid of a bulky and extensive apparatus. If sulphur be present, it impedes the action of acids, and should be separated by roasting the ore in a muffle, or by projecting it with twice its weight of nitre into a red hot crucible, washing off the alkali afterwards with hot water. No one solvent will act upon all the metals: thus nitric acid does not act on gold and platina; and the nitro-muriatic acid, which dissolves these metals, has no solvent action on silver. Hence the necessity of varying the solvent according to the nature of the ore under examination.

In analyzing ores in the dry way, a method which affords the most satisfactory evidence of their composition, and should always precede the working of large and extensive strata, a more complicated apparatus is required. An assaying furnace with muffles, crucibles, &c. are absolutely necessary. See FLUX.

Orgal. See TARTAR.

Origanum and Origany. See MARJORAM.

ORIOLE, or *Oriolus*, a genus of birds, comprising fifty-one species, chiefly inhabitants of America, one found only in our own country. They are gregarious, noisy, numerous, voracious, and great devourers of corn; they often build pendulous nests. The following are the chief species:

The *Galbula*, or Golden oriole, is pale yellow, female dusky brownish green; inhabits Europe, Africa, and America; nine and a half inches long; is migratory; feeds on cherries, berries, and insects; occasionally found in England; builds its nest with leaves on the branches of trees; eggs, four or five, dirty white, with small dusky brown spots; voice sharp; flesh good; four or five other varieties, found in Cochin-china and India.

The *Icterus*, or Icteric oriole, is tawny; inhabits the warmer parts of America and the Carribees; active, bold; builds a large cylindrical nest, hanging from the extreme branches of a tree; domesticated in America for the purpose of destroying insects; nine and a half inches long.

The *phœniceus*, or Red-winged oriole, is black; inhabits in vast flocks from New York as far as New Spain; from eight to nine inches long; very destructive to rice plantations; devours also swarms of insects and worms. Another variety with red shoulders, inhabits Africa. The *persicus*, or Black and yellow oriole, inhabits South America; two or three other varieties; nest pendant, shaped like an alembic, on the extreme branches of trees; sometimes four hundred nests are found hanging from the same tree. The *bonana*, or Bonana oriole, inhabits South America and the Carribee islands; seven inches long; forms a nest of leaves and stalks under a plantain leaf, the leaf itself constituting one end. The *nidipendulus*, or Hang-nest oriole, inhabits the woods in Jamaica; sings charmingly. The *niger*, or Black oriole, is totally black, female greenish; ten inches long; inhabits North America; gregarious; in breeding time sings delightfully.

ORNITHOLOGY, that portion of natural history which treats of birds; describes their form, external and internal; and teaches their economy and uses.

This portion of natural history is, next to botany, one of the most pleasing which can engage the attention or amuse the mind of rational beings. We have, under the various heads into which this science is naturally divided, described the principal animals of the feathered tribe, and although our notices of each individual are necessarily brief, they will be found to contain an epitome of all the most striking features of this portion of the animal kingdom.

ORPIMENT, a sulphuret of arsenic, of a yellow colour, used in painting. See REALGAR.

For the treatment of persons who have taken this poison. See ARSENIC.

Orpine. See SEDUM.

ORPINE, the LESSER, or *Crassula*, a genus of plants, embracing sixty-nine species, Cape plants with few exceptions, some shrubby, but more herbaceous; the former about eight feet, the latter about one foot high, with thick, oblong, succulent leaves, and five-petalled flowers, of a white, red, or yellow hue. They may be propagated among ourselves by offsets or cuttings; but require attention and the heat of a stove.

Orris. See IRIS.

ORTHOTRICUM, a genus of mosses, consisting of nine species, seven of which are common to our heaths and wilds.

Ortolan. See SNOW BUNTING.

ORYCTOLOGY, the science of fossils.

OS, in anatomy, the mouth, it also implies a bone. See BONE and MOUTH.

Osier. See WILLOW.

Osmazome. See FOOD.

OSMIUM, a metal, obtained from the ore of platinum by digesting it in nitro-muriatic acid, by which the greater portion is dissolved and there remains a black powder, which when fused with potassa and washed, furnishes a yellow alkaline solution of oxide of osmium; saturate the alkali with sulphuric acid, pour the mixture into a retort and distil.

A colourless solution of the oxide of osmium passes into the receiver; it has a sweetish taste, and a very peculiar smell, somewhat like that of new bread. When mercury is shaken with this solution it becomes an amalgam, which is decomposed by distillation, and pure osmium remains. It has a dark grey colour, and is not volatile when heated in close vessels; but when heated in the air, it absorbs oxygen and forms a volatile oxide. It has not been fused. The leading characters of osmium are its insolubility in the acids, its ready solubility in potassa, the facility with which it is oxidized, the singular smell of its oxide, its great volatility, and the purple or blue colour produced in its solution by tincture of galls.

OSMUND, MOON-WORT, or *Osmundia*, a genus of ferns, comprising sixteen species, all exotics except the *regalis*, Osmund royal, or flowering fern, common to our putrid marshes. The root boiled in water is gelatinous, and is used in the north to stiffen linen instead of starch.

Osprey. See FALCON.

OSSLETS, little hard substances, which arise amongst the small bones of a horse's knee on the inside. They proceed from strains when the horse is young; and if observed at the beginning, a little oil of origanum rubbed into the part will disperse them; if they are of long continuance they require firing.

OSTEOLOGY, the doctrine of the bones. See ANATOMY, &c.

OSTEOSPERMUM, a genus of Cape shrubs, consisting of twenty-three species; those chiefly cultivated are the *spinosum*, or Prickly, the *pisiferum*, or Smooth, the *moniliferum*, or Poplar leaved; the *polygaloides*, or Milk-wort; and the *cæruleum*, or Blue-flowered osteospermum. They are all tender plants, for the most part requiring watering, and should be treated like myrtles.

OSTRICH, CASSOWARY, or *Struthio*, a genus of birds, having a subconic bill, oval nostrils; wings short, unfit for flight; feet formed for running. Four species as follow:

The *Camelus*, or Black ostrich, with two-toed feet. The ostrich is the largest of all birds. Its weight is about eighty pounds; its height from the top of the head to the ground is from seven to nine feet; length from the back to the top of the tail about the same. When walking, it seems as tall as a man on horseback. Its plumage, as well as its weight, is an insuperable barrier to its ever rising in the air. The vanes of the wing feathers are separate and detached like hairs, and incapable of making any impression on the atmosphere. Those of the tail, and indeed of the whole body, are of the same structure, being all soft as down and utterly unfit, not only for flying, but for defending the body from any external injury. The head, upper part of the neck, sides, and thighs are covered, instead of feathers, with a clear and white kind of hair, which on the head somewhat resembles the bristles of a hog. Its thighs are large and muscular; the legs are scaly, and supported by two thick toes, having a striking similarity to those of a goat; the inner toe, including the claw, is seven inches, the other which is without a claw, is about four inches long; it is the only bird which possesses eye lids, and these are fringed.

Its interior structure has a great affinity to that of quadrupeds. It has two stomachs, the first is muscular and appears to act by trituration; in the other there is a gastric liquor, by which the process of digestion appears to be carried on. On dissection, it is found filled with a variety of different substances, vegetables, grain, flesh, and even with stones, glass, and iron. It lays from forty to fifty eggs as large as the head of a child, one of which will, it is said, furnish a repast for eighteen men; this is, however, we suspect, an exaggeration. It is peculiar to Africa, to the neighbouring islands, and to those parts of Asia which lie in the vicinity of the African continent. It is seldom found beyond the distance of thirty-five degrees from the line on either side; it prefers for its residence those mountains and parched deserts which are never refreshed by rain.

The feathers of the ostrich, which compose his wings and his tail, have been sought after, more or less, in all ages. Among some nations, their eggs, their blood, their fat, and their flesh, have been eagerly sought after as articles of food. They are generally caught in Africa, by being hunted on fleet Arabian horses. They are insatiably voracious, and highly salacious, but the male observes a strict fidelity to the female. The period of laying their eggs varies in different climates. In the torrid zone, the female deposits her eggs in a mass of sand, carelessly scraped together with her feet; there they are sufficiently heated by the warmth of the sun, and need the incubation of the female only for a little during the night. But although the ostrich is little engaged in hatching her eggs, she displays, by continually watching for the preservation of her nascent progeny, all the solicitude of a tender mother; but neither the size of the eggs of these birds, nor the time necessary for hatching them, nor the number of their young, is distinctly ascertained.

The *Rhea*, Rhea, or American ostrich, is grey; it has three toes on each foot, and a round callus behind. This bird is so nearly allied to the ostrich that it may be considered as his representative in the New Continent, to which it peculiarly belongs, inhabiting Guiana, Brazil, Chili, the numerous forests on the river Plata, and even as far south as the straights of Magellan. It is by far the largest bird in the New World; it being about six feet high. Its neck is long, head small, beak flat, but in other respects resembles the cassowary. Its voracity and speed is similar to the ostrich; its time and mode of incubation are not correctly known. The flesh of the young is reckoned good eating. It defends itself with its feet, and calls its young by a kind of hiss.

The *Casuarius*, Emeu, or Cassowary, is blackish; it has three toes on each foot; helmets and dewlaps naked; inhabits the torrid zone, especially the island of Java. Next to the ostrich, and the rhea, it is the largset of the feathered race; from the shortness of the legs and neck, it is not so tall as the ostrich, but the body is more heavy and clumsy. The most remarkable trait in the appearance of these birds is a sort of helmet upon the head, which reaches from the base of the bill to the crown; it is nearly three inches in height, and at the root is three in thickness. The wings are still shorter than those of the ostrich, and, of course, still more unfit for flying. They are furnished with four hard pointed feathers, resembling darts; the feet are also armed with large black claws. They are, nevertheless, peaceable, and inoffensive. It is as voracious as the preceding species. The eggs, ash-coloured, or greenish, spotted, about thirteen inches in circumference one way, by six the other.

The *Novæ Hollandiæ*, or New Holland cassowary, is nearly as tall as the black ostrich, being not less than seven feet ten inches high. Like the rest of the genus, it runs with prodigious speed. Bill black, head, neck, and body, covered with bristly feathers, varied with brown and grey; throat nakedish, blueish; feathers of the body a little incurved at the tip: wings hardly visible; legs brown.

Ottar, or otto of roses. See Roses.

OTTER, Ferret, Stoat, or *mustela*, a genus of animals distinguished by fore teeth, upper six erect, acuter, distinct; lower six, obtuse, crowded, two placed within; tongue smooth. Twenty-eight species, scattered over the globe, six common to our own country; in many respects, the otter tribe of this genus very nearly resembles the weasel tribe, the body in both being long, of the same thickness, feet short, hair shining, claws immoveable; both burrow in the ground and prowl and prey by night; but the otters live mostly in the water, swim on the surface and under, feed chiefly on fishes, do not climb or leap, with the body curved, and tail stretched out, like the weasel's; head larger and thicker, tongue strewed with soft prickles. Otters have five grinders in each jaw, on each side; weasels have four, five, or six. The genus may be subdivided as follows: hind feet palmate as otters; feet cleft as weasels. The following species are the chief:

The *Lutra*, Common, or greater otter, has short ears, eyes near the nose, thick lips, and large whiskers. Colour of the whole body deep brown; throat and breast ash-coloured; legs short and thick; each toe connected to the other by a broad strong web. Its usual length twenty-three inches; its tail sixteen; weight of the male from eighteen to twenty-six pounds; of the female from thirteen to twenty-two. Inhabits all parts of Europe, found occasionally in some of our own fresh water rivers, the north and east of Asia; but abounds in Canada, whence the most valuable furs of this kind are produced. Dwells and burrows in the banks of rivers; swims and dives with great ease; feeds on fish; and sometimes on lambs and poultry. Occasionally ventures into the sea, but never goes far from the shore. It is a fierce animal, and its bite dangerous; yet it may be tamed, made to follow its master like a dog, and even fish for him. Brings forth its young, four or five at a time, in March.

The *Lutreola*, or Lesser otter, resembles the preceding, but only one-third of its size; inhabits marshy places in Germany, Poland, Finland, Russia and Siberia; feeds on fishes and frogs; fetid; fur valuable; caught with dogs in traps.

The *Minx*, or Minx, is of a deep chesnut colour; inhabits North America; feeds on fishes, birds, mice; sometimes haunts farm-yards.

The *Lutris*, or Sea-otter, has the hair thick and long, excessively black and glossy; beneath, a soft down; colour sometimes varies to silvery; toes covered with hair, and joined by a web; hind feet exactly like those of a seal; length of the body about three feet; of the tail thirteen inches and a half. Found in great abundance in Beering's island, and the Fox islands; harmless and inoffensive; hunted for their skins, which are of great value. The young very delicate food.

The *Vulgaris*, or Common weasel, has a tawny brown body, beneath, white: another variety, with the body white, tip of the tail with a few black hairs. Found in our own country, and inhabits the temperate and cold regions of Europe, Asia, and America; in Russia, becomes white in winter; half the size of the ermime; eats fishes, flesh, mice, eggs, and mushrooms, but no other vegetables; preys by night; fetid; dirty; drinks often, cunning, continually looks about; not easily destroyed by a cat; when terrified, becomes epileptic; playful when tamed; brings from six to eight young.

The *Canadensis*, or Pekan, has a blackish tawny body, on the breast a white spot. Two feet long; tail ten inches; inhabits Canada.

The *Foina*, Martlet, or Marten, has a blackish tawny body, throat and breast white, belly deep brown; length eighteen inches, tail ten; inhabits most parts of southern Europe, and is a native of England; preys by night, on poultry, eggs, &c., an enemy to cats; easily tamed when young; brings from three to seven young, and breeds in hollow trees.

The *Zebellina*, or Sable, is dark, tawny, forehead white; throat cinereous: another variety, snowy white; a third with a collar of white round the neck; resembles the marten, but head and ears longer. Inhabits the northern parts of Asia, America, Siberia, Kamtschatka, and the Kurile islands. Sleeps by day, preys by night, on weasels, squirrels, &c., in winter on birds, particularly partridges: in autumn on berries; attacks cats; gravid three months; brings from three to five young; fur very precious. The blackest are reputed the best; hunters are in search for these animals from November to February, some of the finest sable skins are, it is said, often sold for twelve or fourteen pounds sterling. Hunting the sable, in Russia, forms a considerable employment.

The *Putorius*, or Pole cat, has a blackish, yellow body; mouth and ears white; differs from the marten in having the head thicker, and tail shorter; found in Russia, sometimes white; male yellowish, with a whitish mouth; female paler. Inhabits most parts of Europe, and Asiatic Russia; common in England; dwells in stony places; frequents stables, granaries, hollow trees, &c.; sleeps by day, wanders by night in search of rabbits, mice, moles, poultry, &c. &c. Steals eggs; robs beehives; emits from the anus, when agitated, a most fetid vapour.

The *Furo*, or Ferret, has red, fiery eyes; less than the pole cat; body long, slenderer; colour pale yellow: inhabits Africa; tamed in Europe to catch rabbits, rats, &c.; procreates twice a year; gravid six weeks; brings from six to eight, rarely nine young; very fetid.

The *Erminea*, with the tail black at the tip: two varieties, one the stoat, having the body with a red tinge; and the other, the ermine, with a white body, tail blackish at the tip. The body of this species is ten inches long, the hair short, not so shining as the marten: inhabits Europe, the cold parts of America, Asia, China; lives in heaps of stones, banks of rivers, hollow trees, and forests, especially of beech; preys on squirrels, mice, and small animals; the fur of this ermine is very valuable.

For an account of some other animals, usually called weasels, see VIVERRA.

OVEN, a kind of domestic furnace, used for baking bread, pies, tarts, &c. Ovens are generally constructed of brick work, in an oval form, with a very low roof, the bottom being laid with bricks or flat stones, which will bear the fire without being decomposed by it. In the front is a small aperture, and door, by the shutting of which, the heat is confined while the bread, &c. are baking.

In the construction of ovens of this kind sufficient attention is rarely if ever paid to the materials by which the bricks of the oven ought on all sides, as well as the top and bottom, to be surrounded, in order to prevent the escape of the heat: for this purpose very dry coal-ashes, or old mortar, to the thickness of six or eight inches, should be interposed between the bricks forming the interior of the oven, and any other bricks or stones forming the exterior: for if, in making such ovens, this precaution were always adopted, the saving of fuel would be very considerable, and much more than an inxperienced person would be disposed to believe; the best, however, of all materials for such interposition, is powdered charcoal, sifted fine and pressed down close.

Such ovens are usually heated by means of dry faggots of wood, coal, &c.

As these ovens are not calculated for small families, on account of the great space which they require, and the quantity of fuel which they consume, others have been contrived, on a more diminutive scale; these are usually formed of cast iron hammered, and are in general so constructed that they may be heated by the same fire which serves for the cooking of other provisions. See BAKER.

So many ovens of this kind are now in use that we cannot enumerate the names of the various persons who have applied their ingenuity to this subject. In the choice of such, however, it should be always remembered, that economy in fuel is of the first importance, and that that oven is to be preferred which most effectually economizes the heat. See BOILER and STEAM.

Of the utility of ovens in domestic economy, there can be no doubt; but there is one kind of food prepared in them, against which, for the valetudinarian and dyspeptic, we are obliged most strongly to protest: we mean *baked pastry*. Pastry generally contains more or less animal fat, and after it has undergone the heat of the oven, such fat, which is scarcely proper for weak stomachs at any time, is rendered peculiarly unfit for them, and should be most religiously avoided. We have, it is true, elsewhere in our work, insisted upon the impropriety of baked pastry, but it is a luxury in which many persons are so apt to indulge, that its unsuitableness for delicate and dyspeptic patients can scarcely be mentioned too often.

OVERSEER, a parish-officer in this country, who has an opportunity of inflicting considerable misery, as well as of affording much comfort and consolation to a great number of our poor and suffering fellow-creatures. It too often happens that the persons who fill this office, imagine their first and chief duty is to save the money of the parish, and that the less money they spend, the more meritorious is their conduct. To a proper and prudent economy, all due commendation ought to be given, but that economy which consists in withholding from the poor wretch the means of obtaining the necessaries of his very existence, which withholds from him food or raiment; or, in sickness, those comforts of which we all, more or less, stand in need, is not economy, but inhumanity, cruelty, and highly reprehensible. And he who is sincerely desirous of performing his duty as an overseer, will take care that such economy shall never be laid to his charge.

OUNCE, a little weight, the 16th part of a pound avoirdupoise, and the 12th part of a pound troy. But the avoirdupoise ounce is less than the troy ounce. See AVOIRDUPOISE.

Ounce, an animal. See CAT.

OUTLAWRY, is the being put out of the law, or out of the king's protection. It is a punishment inflicted for a contempt in refusing to be amenable to the higher courts. By outlawry, in civil actions, a person is put out of the protection of the law, so that he is not only incapable of suing for the redress of injuries, but may be imprisoned, and forfeits all his goods and chattels, and the profits of his lands: his personal chattels immediately upon the outlawry; and his chattels real and the profits of his lands, when found by inquisition.

OVER-REACH, a wound inflicted by the hind foot upon the heel of the fore-foot of the horse in travelling. It is to be treated like other wounds; if the part be much inflamed, a poultice should be applied.

OWL, or *Strix*, a genus of birds comprising fifty species, scattered over Europe, Asia, and America; about half of which are eared, and half earless. They are distinguished by a hooked bill; cereless; nostrils oblong, covered with bristly recumbent feathers; head, auricles, and eyes large; tongue bifid. They fly abroad by night, and prey on small birds, mice, and bats; their eyes are weak by day, and generally closed: if seen and disturbed, they make at such time short low flights, and may be, without much difficulty, hunted down. At such time the owl, from his apparent stupidity, is often attacked and insulted by many birds who would not dare, at other times, to approach him. All the different species are not equally distinguished by this sensibility to light, some of them pursuing their prey during the day. The legs are usually downy to the toes; claws hooked, sharp.

Owls in general conceal themselves in some dark retreat during the day; the cavern, the rock, a cavity of a decayed tree, or the holes of a ruinous or unfrequented castle are their solitary abode, where

> "———they hoot from the hollow of their
> hallowed thrones;"

and by their harsh notes, render the darkness and silence of the night truly hideous and appalling. The weak and superstitious have often foolishly imagined the noise of the screech owl as a presage of some great calamity; but the good sense of mankind is rapidly dispelling such idle fancies.

The following are the chief of this very useful tribe of animals.

The *Bubo*, or Great owl, has a tawny body; in other varieties darker, with blackish wings; inhabits Europe, Kalmuc Tartary, South America, and our own country. It is sometimes called the Eagle owl. The breadth of the wings is about five feet; the head large; the cavities of the ears large and deep; on each side of the head rise two tufts of feathers, resembling horns, two inches and a half long, which the animal can erect or fold down at pleasure; chases hares, rabbits, moles, and mice, which he swallows whole; but the hair, bones, and skin, which resist the action of the stomach, he vomits up in round balls.

The *Otus*, or Long-eared owl, is found also in this country, but is much less than the former; the horns consist of six feathers, variegated with black. Varieties of this species are found all over Europe, and in America. It is more common and numerous with us than the preceding, which is rarely found here in the winter, whilst the long-eared owl is found in every season.

The *Scops*, or Little horned owl, is easily distinguished from the two former by its small size, being only seven inches long, and by the shortness of its ears; and the feathers more beautifully variegated with brown, black, and red; the greater part of the species emigrate in flocks, at the approach of winter. They destroy multitudes of field-mice.

The *Ulula*, or Brown owl, is brown, variegated with white and black spots; wings, when extended, three feet three inches; a variety much smaller.

The *Stridula*, or Tawny owl, is found in some parts of Europe, our own country, America, and the West Indies; the back, head, and coverlets of the wings a fine tawny red, elegantly marked with black or dusky spots.

The *Flammea*, or Common barn owl, has the body above pale yellow, with white dots, beneath whitish with blackish dots: almost a domestic bird; inhabiting barns, hay-lofts, churches, and even villages; utters a kind of hissing, or harsh and mournful cries, formerly believed, in the country, to be ominous. The plumage is elegant; it is found in Europe and America; eggs five or six, of a whitish colour; the young wholly white; the flesh is then said to be very good eating.

The *Passerina*, or Little owl, is the smallest of the tribe, being only seven or eight inches long, although one variety of this species is twelve inches long. It is not, strictly speaking, a nocturnal bird.

The foreign birds belonging to this tribe are numerous, and of various sizes, but we cannot specify them. There is also, in the northern latitudes, a species common to the old and new world, called the *nyctea* by most ornithologists. It equals, in size, the largest of the owl kind, being two feet long: its plumage is beautiful.

The *Cunicularia*, or Coquimbo owl, inhabiting Chili, is said to dig holes in the ground for bringing forth its young, and for its own habitation.

OX, or *Bos*, an important genus of mammiferous quadrupeds, having two hollow horns, bent outwards and forwards, semicircular, smooth; fore-teeth, lower, eight; tuskless. This genus fights by pushing with the horns; delights in low rich pastures; is used for draught and burden; and invaluable for its flesh, milk, hides, and many domestic purposes. The following nine species are particularly deserving of notice.

The *Taurus*, or Ox, with round horns turned outwards; dewlaps lax. There are many varieties which may be thus arranged: those with horns short, thick, reflected, forehead curly; or WILD OX, comprising those with horns bent back, mane very long; *bonasus*; —those with horns bent forwards, back gibbous, mane long, *bison*;—those with horns round, smooth, distant at the base, bent forwards, *European ox*;—those with horns short, bending back close to the neck, body red, a fatty bunch on the shoulders, *Indian ox*;—those with horns nearly erect, turned forwards, a fatty bunch on the shoulders, *Zebra*;—diminutive, size of a large dog, *Surat ox*;—horns pendulous, adhering only to the skin; back with a bunch, *Abyssinian ox*;—ears pendulous; back gibbous; size large; body white, *Madagascar ox*;—body white, ears black, *Tinian ox*;—body snowy; legs slender; horns elegant; hoofs black; very swift, *African ox*.

The species taurus inhabits various parts of the globe, and is almost every where domesticated for the purposes of agriculture, or for its meat and skin. In England and Scotland it is sometimes found of a small size, without horns. It is obstinate, vicious; attacking with the horns; tearing up the ground, and stamping with the feet when enraged; subject to various diseases, some of which are communicable to mankind: one, the *cow-pox*, has been employed with success as a preventive of small-pox in the human subject. See COW-POX. It is infested by gad-flies, lice, and other insects; is poisoned by yew, hemlock, and anemone; lives from fourteen to sixteen years; gravid nine months; produces one, rarely two young. See AGE, BREEDING, BULL, BUTTER, CALF, CHEESE, COW. See also the conclusion of this article.

The *Arnee*, has erect, semilunar, wrinkled horns; inhabits India; of vast size; eight feet high; black.

The *Americanus*, or American ox, has the horns round, distant, pointing outwards; mane long, woolly; back gibbous; large, fierce, dangerous; inhabits reedy marshes in New Spain.

The *Moschatus*, or Musk ox, inhabits North America in herds, among rocky mountains; runs and climbs well. Flesh tastes musky, whence its specific name.

The *Grunniens*, Grunting ox, or Yak, inhabits Thibet, and is bred in Siberia, China, Persia, and India; large, fierce, impatient of heat; fearful of red colours; shakes the body when irritated; voice a kind of grunting; subject to many varieties from domestication; sometimes hornless. Bezoard is occasionally found in its stomach.

The *Bubalus*, or Buffalo, of which there are several varieties: with horns resupinate, turned inwards, flat on the fore-side;—horns small, taper, pointed, compressed sideways, resupinate; rump and thighs naked;—size of a sheep; fierce;—back gibbous; legs on the lower half white. Inhabits Asia, domesticated in Africa, India, and Italy; size of a cow, except one variety just mentioned. Gravid twelve months; skin tough, hair black or dusky, scanty; head small, with curly hair on the forehead; horns black, thick; dewlapless; nose broad; eyes white; tail short, slender.

The *Cafer*, or Cape ox, has broad horns, approaching at the base; mane short; inhabits Africa and Guinea; very large, strong, and fierce; lives in woods; dangerous to travellers; tramples men, horses, and oxen under its feet; swift; five and a half feet high; body black, or dark ash; face covered with long harsh hair; skin tough; ears pendulous; tail short; flesh coarse, flavour of venison.

The *Burbatus*, or Baas, has short horns, the chin and breast bearded; inhabits north of the Cape; larger than an ox; grey.

The *Pumilus*, or Dwarf ox, has the horns nearly erect; inhabits Africa; less than the stag; well made, shoulders a little elevated; hair tawny brown, shining.

Having already, in various articles of our work, treated of the products, &c. of this important genus of animals, we shall here confine ourselves to the mode of working oxen, and of fattening them.

In rearing oxen, whether for the purpose of sale or work, they should be kept constantly in tolerable condition, without ever being suffered to become stunted in their growth, by either their winter or summer keep. Where the intention is to work them, they should be trained as early as possible, and be brought into work at the age of two, or three years at farthest. In Herefordshire the steers are brought into work at three years old, and are worked two years, mostly in yokes, though harness has lately been getting more common. In teams of six or eight they plough something less than an acre a day. But in the northern parts of Devonshire the oxen are yoked in at from two to three years old, being worked lightly; at four years old they are brought into hard work; and from that age to six they are capable of performing a full day's labour. They there also find that if an ox is to be raised to the largest size he must be worked; as, when kept till five or six years old, without working he does not grow so large. While under this system, he should be well supported with dry food, such as oats in the straw, bean meal, good hay, or cut chaff; and by the use of these, in small proportions, with a few cabbages, turnips, carrots, or potatoes, he may be kept in perfect condition.

The ox mostly reaches his full growth at six, but the largest sized grow the longest. It is unprofitable to keep them longer than seven or eight years old. In some districts four are the usual number in a team, and occasionally two in cross ploughing; and with a double furrow plough six. Four will plough an acre a day, and six fully two acres every day for six weeks. On arable farms of two hundred acres, from eight to twelve oxen are sufficient; or three horses and ten oxen.

Yokes and bows are said to be preferable to the collar for the harness of oxen; and they should invariably be shod before they are put to work, as, where shoeing is neglected, they soon get lame and useless: they should be shoed standing, several machines for which have been contrived.

Oxen may be not only used in ploughing with advantage, but for draught on many other occasions. The late patriotic lord Somerville recommended them to be yoked in pairs, and in *Communications to the Board of Agriculture*, vol. 2nd, page 415, he has given a description of a drag-cart for two oxen, by which they can draw a considerable weight even in a hilly country.

For the purpose of fattening, cattle are generally bought in the spring and about Michaelmas. Those which are bought at the former period, will be ready for the butcher in the summer, according to circumstances; but those purchased at the latter season, are either to be sold in the winter or in the spring: they ought to be forward in flesh, to be improved the beginning of winter, and kept during that hard season either with burnet, hay, turnips, or carrots, &c. in order to be fit for a good market whenever it offers; or they may be young lean cattle, which by their growth may pay for their wintering, and fit to fatten the next summer. Some farmers upon ordinary land, buy in young Welsh heifers, which, if they prove with calf, are sold in the spring with the calf by their side for the dairy, while those that are not with calf are fattened.

The proportion in which different sorts of cattle and sheep stock should be introduced upon grass lands, with a view to their being fattened, must depend upon the goodness of the land, the size of the stock, and various other circumstances. In Somersetshire, when at grass on the rich and middling sorts, from an acre to an acre and a half is allowed to one ox, and some add one sheep to each ox. The great principle is, never to stock in such a way as to restrict the animal in the least degree; as it is by filling themselves quickly and lying down much, that the greatest progress in fattening is made, whether in cattle, sheep, or any other sort of animal when at grass. On the weaker grass lands, a much smaller proportion of stock than on those of the rich and fertile kind can be admitted: not often more than an ox and a sheep or two, to two acres or two acres and a half. Removing the cattle from one pasture to another, is also in fattening what should be more frequently done than it has been by graziers generally. This, as well as grazing them in those pastures which are sheltered, and thereby affording more warmth for the growth of the grass, contributes essentially to the rapid improvement in their increase of fat.

Besides the above, there are other systems of feeding and fattening animals, such are those of **SOILING**, (see that article,) and *stall-feeding*. The former of these modes has been much less attended to than its utility and importance appears to demand; and except in the neighbourhood of the metropolis is comparatively little practised, although it has many advantages.

In the winter fattening of animals, different methods are pursued in different districts, but the most common, and, perhaps, the most advantageous method is stall-feeding. The substances which may be employed in this way are very numerous: the principal of the more succulent kinds are carrots, parsnips, potatoes, cabbages, turnips, grains, &c.; and of the more dry sorts, oil-cake, oats, barley-meal, rye-flour, bean-meal, and other similar materials, with various sorts of straw cut into chaff by means of machinery. In the application and management of these articles, considerable care is necessary to ensure their fullest effect. The art of fattening seems to depend in a great degree on regularly keeping up the excitement of the system by the use of such rich food as shall induce a disposition to rest and sleep; to this end the food should not only be good, but it is of the greatest utility to keep the animals warm, perfectly clean in themselves, and free from all kinds of filth; such care should also be extended to their sheds, stalls, mangers, troughs, and other places from which they take their food. It appears, also, that a combination of moist and dry food, in such proportion as to keep the bowels in a proper state, is of great advantage in promoting the accumulation of fat: nor is the varying of the food a consideration of trifling importance.

The business of fattening in the stall or the farm-yard, usually commences on the decline of the pasture and aftergrasses, towards the latter end of October, and continues through the whole winter, until about the beginning of May. When succulent food is made use of with cut dry meat, which is in general a more profitable method than of having recourse to corn and oil-cake; carrots, parsnips, and potatoes, are said to stand the highest for these purposes; cabbages and turnips have been found inferior in their fattening qualities; the two first are equal to almost any sort of food in this view, being capable of fattening large cattle. The most general practice is to give these roots without any preparation, except that of being sometimes cut, sliced, or chopped, giving only a small proportion at once, three or four times in the course of the day, in cribs or mangers properly contrived for the purpose; proper supplies of cut straw in mixture with hay being, in most cases, provided and given in the intervals of such feeds. The proportion of these different sorts of food that an animal will consume in any given time, cannot be exactly ascertained, as much must depend upon circumstances; in some trials, ten stone of carrots per day, have been consumed by an ox of sixty stone, cut chaff or hay being given in addition.

Of the dry kinds of food in fattening cattle, none is perhaps equal to *linseed oil-cake.* Lean cattle of the smaller kinds have been made perfectly fat with this substance in eight or ten weeks. The usual mode of giving it, is to begin by giving to a beast of a hundred stone two cakes per day, of about six pounds each for six or eight weeks, and then increase them to three till the animal becomes fat: in addition to the cake, from half a stone to a stone of hay in each day. The cake is to be broken down into small parts, and blended with the chaff or other substances given with it.

Whatever be the nature of the food given to cattle for fattening them, it should be regularly given them in sufficient quantity and properly varied; they should also be amply provided with good water; and have litter, so as to keep them perfectly dry and clean.

The advantages and disadvantages of fattening cattle and sheep, to the extent frequently practised at present, have attracted much public attention. Fat meat is unquestionably more nourishing than lean when eaten by persons in a vigorous state of health, and who are employed in hard labour. But we cannot consider fat meat by any means wholesome or desirable for the sedentary, valetudinarian, and dyspeptic. The fattening of animals, as a source of profit, is quite another question: there can be no doubt that fat animals to the farmer and butcher are more profitable than those which are killed half fat, or lean.

An indication to fatten in cattle is called *handling well.* Handling cannot be easily defined; but the skin and flesh of cattle when handled should feel soft to the touch, somewhat resembling that of a mole, but with a little more resistance to the finger. The rigid-skinned animal is always the most difficult to fatten. The improved short-horned breed, besides their mellowness of skin, are likewise distinguished by softness and silkiness of hair.

Common salt has been lately recommended to be mixed with hay, chaff, or moistened food, for fattening cattle in the following proportions: to neat cattle, four ounces per day, one half to be given in the morning, the other in the afternoon;—to horses the same;—to young heifers two ounces;—to calves one ounce per day; to a sheep two ounces per week. See SALT.

Ox-eye daisy. See CHRYSANTHEMUM.

Oxslip. See PRIMROSE.

OX-TONGUE, or *Picris,* a genus of plants, comprising six species, natives of Japan, Barbary, the South of Europe; and one, the *hieraciodes,* or Common ox-tongue, found wild in the borders of our own fields, with yellow blossoms, closing in most varieties soon after noon. It is an agreeable pot-herb while young.

OXALATE, a salt formed by a union of the oxalic acid with an alkali, an earth, or a metal, &c.; see the next article.

OXALIC ACID, an acid found in some fruits, and in considerable quantity in the juice of the *oxalis acetosella,* or Wood-sorrel, and in the varieties of rhubarb. It is most readily procured by the action of nitric acid upon sugar, and has hence been termed also *acid of sugar*. It may be obtained by introducing into a retort four ounces of nitric acid and one ounce of white sugar; nitric oxide gas is copiously evolved, and when the sugar is dissolved, about one-third of the acid may be distilled over: the contents of the retort are then to be emptied into a shallow vessel, and in the course of two or three days an abundant crop of white crystals is deposited; upon further evaporation of the mother liquor, a second portion is obtained. The whole crystalline produce is to be re-dissolved in water and again crystallized, by which the pure acid is obtained. In this way sugar yields rather more than half its weight of oxalic acid. Thus procured, the acid is in the form of four-sided prisms, transparent, and of a very acid taste; they dissolve in two parts of water at 60°, and in their own weight of 212°. When carefully dried they fall to powder, and lose more than one-third of their weight.

Oxalate of ammonia is a very useful test for the presence of lime. Added to any soluble compound of lime, this salt produces an insoluble oxalate of lime.

This acid is used for some purposes in the arts, but it is not used medicinally. When swallowed in large doses it is an active poison, and fatal cases are not unfrequent; it is sometimes taken by mistake for Epsom salts. The instant that the accident is discovered, a quantity of powdered chalk diffused in warm water should be taken, and vomiting excited as speedily as possible; but the mode of treatment recommended under AQUA FORTIS, is, upon the whole, the best, which see.

OXIDE, or *Oxidum*, in chemistry, a compound of oxygen and some other body in such proportion as not to produce an acid. Oxygen combines with bodies in various proportions, constituting a multiplicity of compounds. All these compounds may be arranged generally under two divisions: those which possess the properties of acids; and those which are destitute of such properties; the first are called *acids*, the last *oxides*. It is by no means uncommon to find a compound of the same base and oxygen belonging to both these kinds, according to the proportion of oxygen which enters into the compound. In all such cases, the smaller proportion of oxygen constitutes the oxide, the larger the acid. Oxides may, therefore, exist under any of the forms of a concrete substance, a liquid, or a gas: as a liquid, water may be taken as an example, which is an oxide of hydrogen; or in other words, a combination of oxygen with hydrogen in such a proportion as not to produce an acid. As a gas, nitric oxide is an example; and, as a concrete, red lead and innumerable other substances, both natural and artificial, may be mentioned.

As oxygen combines with the metals, as well as other bodies, in different proportions, its combinations with the metals are distinguished by different prefixes to the term oxide. Thus the *protoxide* of a metal denotes a compound, containing the least quantity of oxygen, or the first oxide which the metal is capable of forming; the *deutoxide* denotes the second oxide of a metal, or the next larger proportion of oxygen with which the metal combines; and when the metal is combined with the largest possible quantity of oxygen, the compound, if not acid, is called *peroxide*. These distinctions have been very lately introduced into chemical language, and are very appropriate. See OXYGEN.

The oxides are of great importance both in medicine and the arts. See our chemical and medicinal articles generally.

OXIDATION. Oxygen, in the state of gas, combines with metals and various other bodies, forming numerous compounds: the operation by which this is effected is termed oxidation.

OXYGEN, or *Oxygenium*, one of the most important agents in chemical operations, is an elastic fluid or gas, insipid, colourless, and inodorous, constituting about one-fourth of the volume of the common air of the atmosphere, and that part alone which supports respiration and combustion: the other three parts being nitrogen, which, when inspired alone, extinguishes life. See Air, Atmosphere, Azotic Gas, and Nitrogen.

This elementary gaseous body may be obtained by heating to redness in a glass retort, the salt called oxymuriate of potash, 100 grains of which yield about 100 cubical inches of oxygen; it may be collected over water in the hydro-pneumatic apparatus. See Gas. It is also given off from black oxide of manganese, red oxide of lead, and nitre when exposed to a red heat.

The specific gravity of oxygen gas is 15, hydrogen being assumed as 1. A small animal confined in it, lives three times as long as when confined in the same bulk of common air. A lighted taper, or a burning piece of sulphur, or phosphorus, introduced into this gas, is very rapidly consumed with intense ignition.

Oxygen is, probably, the most abundant of all natural bodies, and its chemical properties are so important that a very large part of the science of chemistry, consists in a knowledge of the combinations and agency of this body. The two principal sources from which it is derived are water and air. In the former it is condensed into a liquid form, and combined with about a third of its weight of hydrogen; in the latter with nitrogen or azote, and forms somewhat less than a fourth part of the atmosphere. Most of the green parts of vegetables while living, yield oxygen when exposed to the sun's rays; of these, the green conferva of ponds is a remarkable instance.

After the discovery of oxygen gas, it was considered by Lavoisier, and since by other chemists, as the universal supporter of combustion, but there are very numerous instances, in which oxygen, instead of being solidified, becomes gaseous during combustion; and others in which no oxygen is present. Combustion, therefore, cannot be regarded as dependent upon any peculiar principle or form of matter, but must be considered as a general result of intense chemical action.

But, although oxygen is not the universal supporter of combustion, it is nevertheless, indispensable to the most common forms of such phenomena, as well as to animal life; and it appears to be the cause, in part at least, of animal heat. It hastens germination. It combines with a variety of combustible bodies, with all the metals, and with the greater number of animal and vegetable substances. It also is considered as the cause of acidity; from which last property the name *oxygen* is given to it.

Oxygen gas has been occasionally exhibited in some affections of the lungs, but we are not aware that it has ever been attended with any permanently good effects. And although animals live longer in this gas than in common air, yet many circumstances render it probable, that the diluted state of oxygen, such as it exists in atmospheric air, is altogether fitter for animal respiration than oxygen gas alone.

OXYMEL, in pharmacy, a medicine, composed of honey and vinegar, with sometimes other ingredients.

Oxymuriatic acid. See Chlorine.

OXYMURIATES, combinations of chlorine with various bases. See Chlorine.

OYSTER, or *Ostrea*, a genus of bivalve shell-fish, generally with unequal valves and slightly eared; hinge without teeth. One hundred and thirty-six species have been enumerated.

They have been divided into sections and sub-sections thus:—valves furnished with ears and radiate; denominated scallop. These leap out of the water to the distance of half a yard, and opening the shells, eject the water within them; after which they sink under the water and suddenly close the shell with a loud snap. This section is sub-divided as follows:

Equilateral: ears of the valve equal; forty species, of which the following are the chief:

The *Maxima*, with a shell about five inches long, and five and a half broad;

upper valve flat, reddish; found in most European seas in large beds; whence they are dredged up and pickled and barrelled for sale. The *rosea* is middle sized, rosy coloured; habitation unknown.

The second subdivision of this section has unequal ears, one of them generally ciliate, with spines within; fifty-four species; the following are the chief:

The *Pallium*, or Ducal mantle; the shell solid, red, varied with brown and white; margin denticulate; inhabits India. The *opercularis*, inhabits the Northern seas, generally variegated with spots and other marks; two and a half inches long and broad.

Of this remaining subdivision are seven species, with valves more gibbous on one side.

The next section is rough, and generally plated on the outside; comprising the tribe of oysters properly so called. It consists of twenty-six species; those which follow are the chief:

The *Edulis*, or Common oyster; shell nearly orbicular; one valve flat and very entire; inhabits the European and Indian seas; found largely on our own coasts, and affixed to rocks in copious beds. Affords a palatable and nutricious food for most persons; they are best eaten raw. In the month of May the oyster, which is hermaphrodite, casts its spawn or spat; in this month the dredgers, by the law of the Admiralty Court, have liberty to catch oysters of all kinds and sizes, but after the month of May it is a felony to carry away the cultch, or exotic matter to which they adhere, and punishable to take any other oysters, unless such as are of the bigness of half a crown. Oysters sicken after they have spatted; but in June and July begin to recover, and in August are perfectly well. When the tide flows, they are said to lie with their hollow shell downwards, and when it ebbs, they turn on the other side; they do not remove from their place, unless in cold weather to cover themselves with ooze.

The *Diluviana*, with shell plaited on the outside, is about the size of the common oyster; found in a fossil state in the calcareous mountains of Sweden. The *parasitica*, has a thin shell, lower valve convex and thicker, the other flat; inhabits the Indian and Atlantic seas, and fixes itself to the roots and stumps of trees, growing close to, or hanging over water, especially the mango; it varies in form and size, but is often as large as the palm of the hand.

The last section has the hinge with a perpendicular groove; of these there are nine species; the following are examples; the *perna*, with an equivalve, obovate, unequal shell; inhabits the Indian and American seas, about two and a half inches long, in figure resembling a ham or gammon of bacon. The *isognomum*, has an equivalve shell, with a larger lobe, nearly forming a right angle with the hinge; inhabits the Indian ocean and South seas; from five to seven inches long, and about one and three quarters broad in the middle; shell black, with a violet mixture, pearly within; very rare.

Oyster shells consist of alternate layers of carbonate of lime, and an animal matter supposed to be coagulated albumen. When thrown into a fire they emit a great deal of smoke; the animal matter is decomposed, the carbonic acid dissipated, and a pure lime remains.

Oyster shells are antacid, but, as in their unburnt state they are less so than chalk, and when burned differ in nothing from lime, as an article of the materia medica they are of no importance.

As a manure, however, in agriculture, they have been lately applied, in a powdered state, with great success.

OYSTER-CATCHER, SEA-PIE, or *Hæmatopus*, a genus of birds, consisting of one species only, the *ostralegus*, with a red bill; scarlet irids; body sometimes totally black; frequently head, neck, and body above black, beneath white; inhabits almost every shore, and is of course found on the coasts of our own country; sixteen and a half inches long; feeds on marine worms and insects, but chiefly oysters and limpets, which it extracts from the shells with great dexterity; eggs four or five, olive-yellow, with purplish spots.

OZÆNA, an ulceration within the nose, which may arise from various causes, such as external violence, exposure to cold, irritating substances, &c.; and sometimes it arises from syphilitic infection; and in this case the discharge becomes so acrid as to corrode and produce caries in the bones of the nose. When the disease is local, astringent solutions are most useful, such as a decoction of bark, or that mixed with alum; dossils of lint should be dipped in these, and introduced into the nostrils three or four times a day; but stronger astringents will be occasionally necessary. A blister to the temple has sometimes occasionally cured the disease. When it originates in syphilis, attention must be given to the primary disorder; but if the bones be carious, till they are removed, no cure can be expected. In serious cases a medical attendant should be consulted.

P.

PACE, a measure of five feet.

Paco. See CAMEL.

Pain. See PLEASURE.

PAINT, any colouring matter used for painting. We have treated of the colours used in painting, under the article COLOUR-MAKING; as, however, white-lead, the basis of many paints, is extremely detrimental to the health of those who either grind it in oil, or use it after it is so ground, every attempt to supersede the use of so poisonous a substance, is deserving of consideration. The following mixture comes well recommended: Take two quarts of fresh skimmed milk; six ounces of fresh slacked lime; four ounces of linseed oil, and three pounds of Spanish white. The lime must be first introduced into a stone vessel to which should be added such a proportion of milk as will produce a mixture resembling thin cream; next the oil is to be gradually poured in, the whole being gently stirred, and the remainder of the milk added. The Spanish white must next be crumbled in, or scattered on the surface of the fluid, which it gradually imbibes, and at length sinks, when the whole should be briskly agitated. This paint is to be applied with a brush in the usual manner: it may be made of various colours by the addition of different colouring materials.

Painter's colic. See LEAD.

PAINTING, one of the fine arts, consisting in the representation of natural objects visibly, by lines, shades, and colours, on a plain surface. It also consists in expressing, by the same means, conceptions and images of the mind, which do not actually exist in any of the usual forms of nature. It is an art displaying either conjointly or separately, the powers of imagination and imitation; and may be divided into invention, which regards the original thought or conception of the subject; and into composition, design, and colouring, which regard the execution of the work. Painting is at once a noble, useful, and amusing art, when the objects themselves, about which it is employed, are noble, useful, and amusing; but this, like most other arts, is liable to abuse. There are many pictures in existence, which never ought to have been painted; and the artists who painted them, have demonstrated their want both of good sense, and of sound morality, in such employment of their talents.

PALATE, in anatomy, the roof of the mouth.

PALES, narrow pieces of wood, joined above and below to a rail, to enclose gardens, parks, &c. &c.

The following is an excellent paint

for pales: let any portion of tar be ground with as much Spanish brown as it will bear, without becoming too thick; to be applied in a similar manner to paint: if, however, the mixture be warmed, or made hot, and stirred occasionally, it will be found to attach itself to the wood more effectually; the colour may be varied by the addition of ivory-black, &c. &c.

PALETTE, a light board, of a particular shape, on which a painter holds his colour when he paints.

PALLADIUM, a metal obtained from the ore of platinum thus: digest the ore of platinum in nitro-muriatic acid, neutralize the redundant acid by soda, throw down the platinum by muriate of ammonia, and filter; to the filtered liquor, add a solution of cyanuret of mercury; a yellow flocculent precipitate is soon deposited, which yields palladium on exposure to heat. It also exists native in the ore of platinum, in small fibrous grains.

Palladium is of a dull white colour, malleable and ductile; its specific gravity is about 11. It is hard; and fuses at a temperature above that required for the fusion of gold.

PALM, the inner part, or hollow of the hand. A measure of length containing three inches.

PALM, a name applied to several trees of different genera. For CABBAGE-PALM, see CABBAGE-TREE; see also COCOA.

PALM, the DATE, DATE-TREE, or *Phœnix*, a genus of trees consisting of two species; the calyx three-parted; corol three-petalled. Male: anthers linear, four-sided. Female: pistil one; drupe ovate; seed solitary.

The *Farinifera*, is an East Indian tree, with pinnate fronds, longer than the trunk.

The *Dactylifera*, with pinnate fronds shorter than the trunk, is a native of Arabia and Persia. The trunk rises to sixty, eighty, or a hundred feet high; the stalks are generally full of ragged knots, which are the vestiges of the decayed fronds. The trunk of these trees is not solid, but the centre is filled with pith, around which is a tough bark, full of strong fibres while young, but as the tree grows old, this bark hardens, and becomes woody; to it the fronds are closely joined; these, when grown to a size for bearing fruit, are six or eight feet long, and may be termed branches, for the tree has no other: these have narrow long pinnæ, set alternately on their whole length. It is necessary for fructification, that male and female trees grow near together. The fruit is an oblong berry, with a thick pulp inclosing a hard oblong drupe, with a deep furrow running longitudinally; the bunches of fruit are sometimes very large; it is the *dates* of the shops, which are brought to this country from the Levant.

The cultivation of this tree has been tried in Jamaica, but it does not flourish. Nor does it succeed well either in France or Spain. In our own country, the tree is sometimes raised from foreign seeds, as a green-house plant, but it never produces either fruit or flower.

Although the date-tree grows every where on the northern coasts of Africa, it is seldom carefully cultivated beyond Mount Atlas, the heat not being sufficient to bring the fruit to maturity. To the inhabitants of that part of Zaara, near Mount Atlas, the date-tree supplies the place of corn. There is scarcely any part of this tree which is not useful. The wood is used for building and instruments of husbandry; the bark affords an edible substance called the marrow of the date; the leaves are also eaten when young; the old leaves are used for mats and other articles; and the young shoots are used for making ropes.

A milky juice is also obtained from this tree, by incision, which is refreshing and agreeable; the male flowers are also eaten.

A considerable trade is carried on in dates, in the interior of Africa, and large quantities are exported to France and Italy. The crop is gathered towards the end of November.

This tree exhibits great variety in fruit, size, quality, and colour; twenty different kinds have been enumerated. Perhaps no tree whatever, is used for so many and valuable purposes as the date-tree: even the stones are given to camels and sheep as food.

Another genus of trees, called DATE-PALM, DATE-PLUM, or *Diospyrus*, consisting of eight species, chiefly natives of the East Indies, has been described, of which the two following are most worthy of note: The *lotus*, having the surface of its leaves of different colours, is found in Africa and Italy, in which last country it grows thirty feet high. The *Virginianum*, Pitchumen, Pishoman, or Persimen plum, is a native of Virginia, rising to twelve or fourteen feet high. Both species may be cultivated from seeds in our gardens, though most successful in our green-houses, or moderate hot-beds; and if gradually inured to our climate, when young plants, will ultimately endure all its varieties.

PALM, the FAN, or *Corypha*, a genus consisting of two species, natives of the East Indies, and the Moluccas, as follow: the *umbraculifera*, or Umbrella-tree, with a straight stem, and as tall as a ship's mast, ; leaves the largest of all vegetables, one being able to cover twenty men; each when dry becomes folded like a fan; blossoms yellow, with a strong smell. The pith of the trunk is beaten into a kind of flower, and baked into cakes; the plums, or fruit, have a pleasant flavour, and are much esteemed by the natives. The leaves serve also for covering houses, and for writing upon; most of the books shown in Europe, for the Egyptian papyrus, are made from the leaves of this palm. The *rotundifolia* is the other species.

PALM, the DWARF, PALMETTO, or *Chamærops*, a genus in botany, having a three-parted calyx, petals three, stamens six, pistils three, drupe three, one-sided; it consists of three species, natives of the south of Europe, Japan, and Cochin-China.

PALM-OIL, a butyraceous oil usually imported from the coast of Guinea, and said to be the production of the *cocos butyracea*, a species of palm, native of the Brasil. This, however, is doubtful. It is eaten by the inhabitants of the warmer parts of Africa instead of butter. In this country it is used as an emollient in some few ointments, &c., but we think from its soon becoming rancid, as well as from its very slight medicinal qualities, that it ought no longer to form an article of the materia medica. It is occasionally used, we believe, by soap-boilers.

Palpitation of the heart. See HEART.

PALSY, or *Paralysis*, a disease distinguished by a loss or diminution of the power of voluntary motion, and of nervous energy, affecting certain parts of the body, and often accompanied with drowsiness. It is sometimes confined to a particular part, but it more usually happens that one entire side of the body, from the head downwards, is affected. When one half of the body is affected longitudinally on one side, it is termed *hemiplegia*; when transversely, as both legs and thighs, it is termed *paraplegia*. This disease is also symptomatic of several diseases, as worms, scrofula, syphilis, poisons, &c.

It may arise from various causes; from apoplexy; immoderate use of intoxicating liquors; excessive indulgence in sexual gratification; by ligatures on some of the leading nerves; poisons, particularly the poison of lead; in a word, whatever has a tendency unduly to exhaust the irritability, or excitability of the system, may produce this disease.

It usually comes on with a sudden and immediate loss of the motion and sensibility of the parts; but, in a few instances, it is preceded by a numbness, coldness, and paleness, and sometimes by slight convulsive twitches. When the head is much affected, the eye and mouth is drawn on one side, the memory and judgment much impaired, and the speech indistinct and incoherent. If it affects the extremities, and is of long duration, with the loss of motion and sensibility, there is also a considerable flaccidity and wasting away in the muscles of the parts affected. When it attacks any vital part, such as the brain, heart, or lungs, it soon terminates fatally. When it arises from injuries done to the spinal marrow, it is usually incurable; and in an advanced period of life, the prognostics are much against its removal.

The cure must be attempted by removing, as far as possible, any compressing causes, and to rouse gradually, the torpid portion of the nervous system. It may sometimes be proper, where the attack is sudden, the disease originating in the head, with great determination of blood to that part, particularly if in a plethoric habit, to open the temporal artery, or jugular vein, and exhibit cupping glasses to the neck, and give also active purges. But where the patient is advanced in life, and of a debilitated constitution, regular evacuations from the bowels, and blisters to the nape of the neck, with stimulant diaphoretics, as ammonia, guaiacum, &c. in moderate doses, and regularly persevered in, promise the most relief. Various local means of increasing the circulation, and exciting the nervous energy in the affected parts, may be employed with decided benefit; such are mustard poultices, an embrocation of horse-radish; fomentations; the vapour bath; electricity; galvanism; and a variety of stimulant, rubefacient, and even blistering applications, may materially assist the recovery. A stimulant diet, and the internal use of stimulant medicines, such as ammonia, the bark, &c. according to circumstances, with warm clothing, will, in most cases of palsy, be absolutely necessary. The best medical advice which can be had, will not, of course, be neglected.

PALSY in **HORSES**, is more commonly partial than total. It is often a symptom of apoplexy, and is then to be treated accordingly. In paralytic affections of limbs, blistering the part is the best remedy. Horses which are kept out in cold wet weather, are sometimes seized with a numbness of the limbs, but this is different from palsy, and is soon removed by placing them in a warm situation. See APOPLEXY.

PANADA, bread boiled in water, to the consistence of a pap. Dry and well baked biscuits soaked, are the best for this purpose.

PANCAKE, a cake made of flour and other ingredients, and baked in a frying pan. Perhaps a more unwholesome dish than this, for the dyspeptic and valetudinarian, can scarcely be prepared.

PANCREAS, or **SWEET-BREAD**, in anatomy, is a large gland of the salivary kind, of a long figure, compared to a dog's tongue; it lies across the upper and back part of the abdomen, under the stomach. Its use is to secrete a juice called the pancreatic juice, which appears to be similar in its properties to saliva, and together with the bile, helps to complete the digestion of the aliment, and renders it fit to enter the lacteals. It has a duct, called the pancreatic duct, which is white and small, and runs through the middle of it, towards the duodenum, into which it pours its contents by an opening common to it, and to the ductus communis choledochus.

PANGOLIN, or *Manis*, a genus of animals, consisting of two species, distinguished by a round extensile tongue; toothless; mouth narrowed into a snout; body covered above with moveable bony scales.

The *Pentadactyla*, or Short-tailed manis, is in length from six to eight feet including the tail; inhabits Guinea, China, and India; when irritated erects its scales; when attacked rolls up; feeds on ants and other insects. From the strength of its scales it is able, when rolled up, to resist the attack of the leopard; and by twisting its scales round the trunk of the elephant, it is said to destroy this bulky animal.

The *Tetradactyla*, or Long-tailed manis, is supposed to be a native of Guinea, length of the body about fourteen inches, tail more than three feet.

These animals approach very near the genus of lizards.

PANIC-GRASS, or *Panic* [illegible]

nus of plants, having the calyx three valved, one-flowered; the third valve very small; seed invested with the permanent hardened corol. Eighty-two species scattered over the globe, of which four are common to our own corn-fields; of these, some are spiked, others panicled. Those common to our own fields are the following:

The *verticillatum*, with whorled, spike, and diffuse culms, found in corn fields; the *crus galli*, with spike doubly compound, found in our wet fields; another variety, with the awns ten times as long as the glumes;—the ***sanguinale***, having finger-like spikes, found also in our corn-fields;—the *dactylon*, with finger-like spikes and creeping roots, is found on our sandy shores.

The two following are deserving particular notice:

The *Italicun*, with a compound spike, culm simple; leaves alternate, flat, striate, reflected. It is from this plant the Italians obtain their millet-seed, whence its specific name: a native of the Indies.

The *Miliaceum*, or Millet panic, has a loose, flaccid panicle; leaves with hairy or glabrous sheaths; glumes mucronate, nerved; culm chanelled, branched, leafy. The seeds are the common millet seeds of the shops. The plant is indigenous to India.

Millet seeds make an occasional variety of pudding, but they do not require any particular notice.

PANICLE, in botany, a fructification, or species of inflorescence, in which the flowers or fruits are scattered on peduncles variously subdivided; as on oats and some grasses.

PANORPHA, a genus of insects, comprehending nine species, scattered over the globe; the ***communis*** only is indigenous to our own country; its wings are of equal length, spotted with black and transparent; body longest; frequent in meadows during the early part of summer. The *coa* is a native of the Greek islands; larger than the preceding, its wings are beautifully spotted with brown and yellow.

Pansy. See VIOLET.

Pantaloons. See BREECHES.

Panther. See CAT.

PAPAW TREE, or ***Carica***, a genus consisting of two species, both natives of India: the *papaya*, and the ***posoposa.*** The fruit of the female papaya, called papaw, is boiled by the Hindoos for food, and has the flavour of pompion. The buds of the flowers are preserved as a sweetmeat, and the long fruit is often pickled like mangoes.

Both species are propagated by seeds procured from their native climate. They should be sown in a hot bed early in the spring, and when the plants are about two inches high, each should be transplanted into a separate pot, filled with light, loamy earth, and plunged into a hot bed of tanner's bark, carefully shading them from the sun till they have taken root, after which they must be treated in the same manner as other tender exotics. They should have very little water; but in the summer the watering should be often repeated. In three years, by good management, they will produce flowers and fruit in great perfection. As they grow to eighteen or twenty feet high, the stove must be contrived so as to receive them.

PAPER, a thin, flexible leaf, usually white, artificially prepared from many vegetable substances, chiefly to write upon with ink.

The art of making paper, as at present practised, is not of a very ancient date. Paper made from linen rags appears to have been first used in Europe towards the beginning of the thirteenth century.

The ancients used successively palm-tree leaves, table books of wax, ivory, and lead; linen and cotton cloths, intestines or skins of different animals, the inner bark of plants; and in some places and ages the skins of fishes, the intestines of serpents and the back of tortoises, for the reception of the thoughts by writing.

A variety of plants have been used for paper in former ages; hence arose the terms codex, liber, folium, tabula, &c.; and although, in Europe, all these disappeared upon the introduction of the payrus and parchment; yet in some countries the use of them remains to this day. In Ceylon for instance, they write on the leaves of the tallipot; and the Bramin MSS. in the Tulinga language, sent to Oxford from Madras, are written on leaves of plants.

The paper long used by the Greeks and Romans, was made of the leaves of an aquatic plant called papyrus, whence the name paper. The paper of the Chinese is of various kinds; some is from the bark of trees, especially the mulberry and the elm, but chiefly from the bamboo and cotton.

The paper, however, which is now most commonly and generally used, is made from linen rags; that is, from shirts and other linen when worn threadbare; and latterly, indeed, from the increased use of *calico* as an article of clothing, cotton rags are become almost of as much importance as linen rags, and should have equal care devoted to their preservation for the manufacture of this useful and invaluable article.

The first thing to be done in the manufacture of paper, is to put the rags into a machine or cylinder, formed of wire, which is made to turn round with great velocity, to whirl out the dust; they are then sorted according to their different qualities; after which they are put into a large cistern or trough, perforated with holes, through which a stream of clear water constantly flows. In this cistern is placed a cylinder about two feet long, set thick with rows of iron spikes. The cylinder is made to whirl round with inconceivable rapidity, and with the iron teeth rends and tears the cloth to atoms, till, with the assistance of the water it is reduced to a thin pulp. By the same process all the impurities are cleared away, and it is restored to its original whiteness. This fine pulp is next put into a copper of warm water, and here it becomes the substance of paper and ready for the mould; for which purpose it is conveyed to the vat. This vat is made of wood, generally about five feet broad and two or three feet deep. It is kept to a proper temperature by means of a charcoal fire. The mould is composed of many wires set in a frame close together, and of another moveable frame equal in size to the sheet of paper to be made. These wires are disposed in the shape of the figure which is discovered in a sheet of paper when held up to the light. The workman holds the frame in both his hands, plunges it horizontally into the tub, and takes it up quickly; the water runs away between the wires, and there remains nothing but the beaten pulp in a thin coat, which forms the sheet of paper.

Another person, called the *coucher*, receives the mould, and places the sheet of paper on a pelt, or woollen cloth, during which the workman makes another sheet. The workmen proceed in this manner, laying alternately a sheet and a felt till they have made six quires of paper, which are called a post; when the last sheet of the post is covered with the last felt, the workmen employed about the vat, unite and submit the whole heap to the action of a press. After this operation, another person separates the sheets of paper from the felts, laying them in a heap; and several of these heaps collected together are again put under the press. They are turned and pressed several times, and then the sheets are hung up three or four together on lines to dry.

The paper is now to be sized, because in its present state it will not bear the ink. The size is made of shreds and pairings collected from the tanners, curriers, and parchment makers; and immediately before the operation a certain quantity of alum is added to it. The workman then takes a handful of the sheets, smoothed and rendered as supple as possible, and dips them into the vessel containing the size; and when he has finished ten or a dozen of these handfuls, they are submitted to the action of the press; the superfluous size is carried back to the vessel by means of a small pipe. The paper is now ready to be hung sheet by sheet on lines to dry. When it is sufficiently dry, it is carried to the finishing room, where it is pressed, selected, examined, folded, made up into quires, and finally into reams. It is here submitted twice to the press; first when it is at its full size, and secondly, after it is folded.

Every quire of paper consists of twenty-four or twenty-five sheets; the larger number refers to paper made use of in printing; and each ream contains twenty quire. In the manufacture many sheets are damaged; these, in sorting, are put together, and two of the worst quires, containing only about twenty sheets, are placed on the outsides of the ream, and are called *outside* quires. The reams are tied up in wrappers made of the settling of the vat, and they are then fit for sale.

The process of paper making takes about three weeks.

The greatest modern improvement in paper-making is the bleaching of the rags. This is conducted by different methods, either by bleaching them immediately after they are sorted in the half stuff, that is, after they have been once ground in the washing engine, or while they are in the engine. For the first of these methods, Mr. Campbell obtained a patent in the year 1792. It consists in a chamber, which must be air tight, into which the rags are introduced; and with proper retorts, containing a mixture of manganese, sea salt, and sulphuric acid heated to a certain extent, a gas will be discharged from the mixture, which destroys all the colour that the rags may contain.

Another important alteration has been recently made in this manufacture, by the adoption of machinery for fabricating it from the pulp, and at one operation pressing it between the pelts, and rendering it fit for a second pressure, by which an immense saving of labour is made, and the quality of the paper: Messrs. FOUDRINIERS have, or had, a patent for these machines.

Paper has been occasionally made of straw and other materials not commonly in use; and Mr. KOOP, in 1820, obtained a patent for straw-paper; but the use of this article is not become common.

The last improvement we can notice in the manufacture of paper is, by Messrs. T. GILPIN and Co. on the Brandywine, North America, who have invented a machine, which makes paper of a greater breadth than any made in America, and of *any length* in one continued unbroken succession of fine or coarse materials, regulated at pleasure to a greater or less thickness.

Wove, or woven paper, is made in moulds, the wires of which are exceedingly fine, of equal thickness, and woven or latticed one within another. The marks, therefore, of these are easily pressed out so as to be scarcely visible.

Blotting paper, and paper used for filtering fluids, is paper not sized, into which therefore, the ink readily sinks. The best filtering paper is made of woollen rags chosen for the purpose.

Pasteboard is made in a similar way to that of paper; and when it is wanted very thick, it is made by having sheets pasted one upon another. There is, however, a kind of thick pasteboard, called *mill-board*, used for the covers of books, which is made at once. It is composed, like *brown* paper, of very coarse rags, old ropes, &c.

Paper is subject to heavy excise duties, the particulars of which we have not room to enumerate; and the manufacturer must take out an annual license.

PAPER-HANGINGS, those papers which have various figures, &c. printed or painted on them for the decoration of the walls of rooms, &c.

There are three modes of colouring paper hangings. The first is effected by printing on the colours; the second by using the stencil; and the third by laying them on with a pencil as in other kinds of paintings. When the colours are laid on by printing, the impression is made by wooden prints, which are cut in such a manner, that the figure to be expressed is made to project from the surface by cutting away all the other part; and this being charged with the colours, tempered with their proper vehicle, by letting it gently down on the block on which the colour is previously spread, conveys it from thence to the ground of the paper, on which it is made to fall more forcibly by means of [illegible] weight and the effect of the arm of the person who uses the print. There must be as many separate prints as there are colours to be printed.

Stenciling the colours is performed thus: the figure which all the parts of any particular colour make in the design to be painted, is to be cut out in a piece of leather or oil cloth, (such pieces of leather or oil cloth being called stencils;) these being laid flat on the sheets of paper to be printed, spread on a table or floor, are to be rubbed over with the colour properly tempered by means of a large brush; the colour passing over the whole is consequently spread on those parts only of the paper where the cloth or leather is cut away. Stenciling is found, however, not to be so exact as painting.

Penciling is only used in the case of nicer work. It is performed in the same manner as other paintings in water or varnish.

When figures are made with what is called flock, the paper designed for receiving it is first prepared with a varnish ground of the figures designed, with some proper colour, or by that of the paper itself. The flock is strewed over the paper, which is compressed by a board, and after it is dry, the flock is to be brushed off with a soft brush from the unvarnished part of the paper, leaving the figures as desired. The flock is prepared by cutting woollen rags by the hand by means of a large bill or chopping knife.

Mr. John Middleton communicated some improvements in the printing of paper a few years ago to the Society of Arts, but we cannot transcribe them.

An *imitation of paper-hangings*, by stenciling the colours at once on the naked wall, has latterly been adopted, and when no very great nicety of colouring is desired it answers the purpose tolerably well. The wall is previously covered with the ground desired, and the several colours are laid on at different intervals after each has respectively become dry. The patterns for such stenciling are commonly cut in pasteboard; the most convenient size is about twelve or fifteen inches square; of course great care should be taken that the edges of the pattern should be such as, on every removal, to correspond exactly. In the preparation of the colours for all sorts of paper-hangings, and their imitations in stencil, great care and nicety are required. See COLOUR-MAKING.

PAPIER MACHÉ, a substance made of the cuttings of white or brown paper, boiled in water, and beaten in a mortar, till they are reduced to a kind of paste, and then boiled with a solution of gum Arabic, or of size, to give tenacity to the paste, which is afterwards formed into different toys, &c. by pressing it in oiled moulds. When dry it is done over with a mixture of size and lamp-black, and afterwards varnished.

PAPILLÆ, in anatomy, the fine terminations of the nerves on the tongue, skin, &c.

PAPULÆ, or PAPULOUS ERUPTIONS, in medicine, very small and pointed elevations of the skin, with an inflamed base, not containing any fluid, nor tending to suppuration.

Papyrus. See CYPER-GRASS, and PAPER.

PARACENTESIS, the operation of tapping, to evacuate the water in dropsy.

PARADISE, BIRD OF, or *Paradisea*, a genus of birds consisting of twelve species, having the bill covered with a belt of downy feathers at the base; feathers of the sides very long; two of the tail feathers naked; inhabitants of New Guinea, the Papuan islands, or islands of the Indian ocean. The following are the chief:

The *Apoda*, or Greater paradise bird, is of a chesnut colour; neck beneath green gold; feathers on the sides longer than the body; two middle tail feathers long, bristly. Another variety of a smaller size. Inhabits the islands near New Guinea; feeds on moths and butterflies; flies in flocks with a leader at the head, all making a noise like the thrush.

The strangest tales were formerly told of this bird. The most remarkabl features of it are about forty or fifty long feathers, which spring from each side below the wing, and, mingling with those of the tail, augment the apparent size of the animal, without adding hardly any thing to its weight. It is about the size of the thrush, but its feathers make it appear much larger. In some parts of India the feathers fetch a great price, being worn as ornaments of dress, both for their lightness and lustre.

The *Regia*, or King of the birds of paradise, is a chesnut purple, beneath whitish; a green gold band on the breast; inhabits the same countries as the last; from five to seven inches long; solitary.

The *Tristis*, or Grakle bird of Paradise, has a triangular naked space behind the eyes; head and neck brown; body brownish; nine and a half inches long; inhabits the Philippine Islands; easily docile, and imitative.

Paradise tree. See PLANTAIN TREE.

Paralysis. See PALSY.

PARAMECIUM, a genus of worms consisting of seven species, invisible to the naked eye; simple, pellucid, flattened oblong, found chiefly in stagnant waters or infusions; one in salt water. The *aurelia*, *chrysalis*, and *acutum* are the chief.

PARAPHIMOSIS. When the præputium cannot be retracted beyond the glans, the disorder is called *phimosis*, and when retracted and cannot be drawn over the glans again, it is termed *paraphimosis*. These are generally removed by emollient cataplasms, or mercurial ointment applied to the part; and emetics and brisk purgatives; sometimes an emolient or saturnine lotion will be necessary to be introduced between the glands and the præputium to keep the parts clean, and prevent the matter from corroding. When the disease is obstinate, medical advice must be obtained. See GONORRHŒA.

PARAPHRENITIS, or inflammation of the diaphragm, is sometimes mistaken for a complaint of the stomach, kidneys, colon, liver, or pancreas. It is distinguished by a continual fever, pain, greatly increased by breathing or coughing; a sensation of fulness in the stomach, and nausea; a quick, small, suffocative respiration; constant delirium, difficult swallowing of solids, convulsions, and hiccup. It is always extremely dangerous, and therefore the best medical advice should at once be had. Bleeding, and other evacuations, as mentioned under fever and inflammation of the lungs, must be adopted. See those articles.

PARASITIC, a term in zoology applied to those animals which receive their nourishment in or from the bodies of others, as worms, polypes, &c. In botany it is applied to plants which grow on some other plant, and not on the ground, as misletoe, &c. &c.

PARCHMENT, in commerce, the skin of sheep or goats, prepared after such a manner as to render it proper for writing upon, covering books, &c. The manufacture of parchment is begun by the skinner, and finished by the parchment maker. The skin having been stripped of its wool, and placed in the lime pit, as mentioned under the article leather, the skinner stretches it on a kind of frame, and pares off the flesh with an iron instrument; after which it is moistened with a rag, and powdered chalk being spread over, it is rubbed with a pumice-stone to scour off the flesh; the iron instrument is then passed over it as before, and then it is again rubbed with the pumice-stone without chalk; the iron instrument is then a third time passed over it; the flesh side being thus prepared, the wool side is treated with the iron in the same manner. It is then stretched on a tight frame, and scraped again; and after sundry similar processes it is handed over to the parchment-maker, who first, while it is dry, pares it on a summer, which is a calf-skin stretched in a frame, with a sharper instrument than that used by the skinner. It is afterwards made smooth by pumice-stone, on a bench covered with a sack stuffed with flocks, by which process it becomes fit for use. The parings are used for making glue, size, &c.

Vellum, is parchment made of the

skins of abortives, or at least sucking calves: it is prepared in the same manner as parchment, except in not being passed through the lime-pit.

A Mr. *Hitchcock*, some years since, obtained a patent for converting old skins of parchment or vellum into leather. But we do not think his process has been much attended to.

PARDON, a term in very common use among mankind, implying a remission of some penalty or crime which is justly due. The power of pardoning in this country, and in most monarchical states, resides in the king. All pardons must be under the great seal. The effect of a pardon, for a criminal offence is, to make the offender a new man; to acquit him of all penalties and forfeitures annexed to the offence, and to give him a new credit and capacity. We cannot, certainly, as the laws now are, object to the exercise of the power of pardoning; but it would be surely wiser to make our laws more humane, than to risk the exercise of such a power, which, from its very nature, must often be exercised partially and unequally.

PARENCHYMA, in anatomy, the spongy and cellular substance that connects parts together. It is now only applied to the connecting medium of the substance of the lungs. Parenchyma is applied, in botany, to the fleshy substance which lies within the cellular membrane, and surrounds the pith of plants.

PAREIRA BRAVA, the root of a species of CISSAMPELOS, a genus of plants consisting of five species, natives of the West Indies and the Cape. The *pareira*, affords the root found in the shops under the name of pareira brava, which has been recommended in suppressions of urine and calculous complaints, but it is little known in this country. The root of the *caapeba*, another species of cissampelos, is said to be an antidote against the bite of venomous serpents: the last is a native of Jamaica; the first of Brazil.

PARENT, a term of relation applied to those persons from whom we derive our temporal existence.

The moral duties of parents towards their offspring are so great and important, so big with consequences to the future man, that it is impossible to speak of them in terms too strongly. Their unwearied care and assiduity; their patience, forbearance, and kindness; their firmness, moderation, and temper, must all be in incessant activity if they desire their children to become good and virtuous beings; and most of all must parents take especial care that their own conduct is in accordance with those precepts which they desire that their children should follow: for a discrepancy between them cannot fail of being extensively mischievous to the young mind.

In this country, by the 43 Eliz. c. 2. the father and mother, and also the grandsire and grandmother, of feeble and poor descendants, are obliged to support them at their own expense, provided they be able, in such manner as shall be directed by the quarter sessions. And, by another statute, if a man absconds, and desert his children, the churchwardens and overseers of his parish may seize his property, and dispose of it for their relief; he is moreover liable to imprisonment for such desertion.

In this country the parent has certain control over his children before they arrive at the age of twenty-one years; the chief is, that a child cannot contract marriage before that period without the father's consent; but in consequence of the ease with which a temporary residence is obtained, this is frequently evaded by the publication of banns.

PARIETAL BONES, in anatomy, two arched, and somewhat quadrangular bones, situated one on each side of the superior part of the cranium; each of these bones form an irregular square. See SKULL.

PARING, in farriery, an operation performed on a horse's foot, with a view to adapt it to the shoe. In performing this operation, more judgment and skill are necessary than is commonly supposed. Paring should never be performed unless the horny sole is uneven: for as shoes are designed to preserve the feet, so also is the horny sole; and it would be truly absurd to remove that which is so well adapted for the purpose.

PARING and BURNING, are operations which may be practised in agriculture with great success, and are greatly to be preferred to every other method for bringing barren land into cultivation, where the turf will produce an adequate quantity of ashes. Experience has proved that they are much less expensive than clearing the land by tillage, produce much better crops, and leave the land in a better state for cultivation. But when the ground is deficient in vegetable matter, or if it be full of stones and rocks, or covered with wood, other means must be resorted to. See BURNING.

PARIS, *Herb-Paris*, or TRUE-LOVE, a genus consisting of one species only, the *quadrifolia*, indigenous to the woods of our own country: the calyx is four-leaved, the petals four; berry, superior four celled. The colour and smell of this plant indicate narcotic powers. The leaves and berries are said to be efficacious in the cure of hooping cough, acting like opium. The root is emetic; but it is a dangerous medicine, unknown in present practice.

Paris, plaster of. See PLASTER OF PARIS.

PARK, an extensive tract of ground enclosed with wall or paling, well variegated with wood and water, for the support of cattle, and preservation of deer and game. It becomes a park by custom, or by the king's grant. There are many parks in possession of the crown, as well as of opulent individuals, of all which Windsor great park is the largest in the kingdom.

For the paling of parks see FENCE.

PARKINSONIA, in botany, a genus consisting of one species, an American tree, growing to the height of twenty feet, with prickly branches: long linear, pinnate leaves, and yellow flowers on slender branches, of a most delightful scent.

PARLIAMENT, the grand assembly of the three estates of this kingdom, summoned together by the king's authority, to consider of matters relating to the public welfare.

The power of parliament is so transcendent and absolute, that it cannot be confined either for causes or persons, within any bounds. It is the legislative branch of the supreme power in Great Britain, consisting of the *King;* the lords spiritual and temporal, commonly called the *House of Peers;* and the knights, citizens, and burgesses, representatives of the great body of the people, and usually called the *House of Commons.*

The house of peers consists of the hereditary nobility; such are dukes, marquisses, earls, viscounts, and barons; and the archbishops and bishops, and other peers which the king has the prerogative of creating at his pleasure. The house of peers is not only a branch of the legislature, but is the highest court of appeal in this country; it also becomes, on some extraordinary occasions, a supreme court of judicature, such as in trials by impeachment, and also in some offences committed by any of their own body.

The House of Commons is elected, or supposed to be elected, by the great body of the people. The peculiar laws and customs of this house relate principally to the raising of taxes, and the election of members to serve in parliament. It is also the grand inquest of the nation, by whom all charges relative to impeachment, &c. must be preferred to the House of Peers. All money bills must also originate in the House of Commons.

Much has been said and written upon the question of parliamentary reform. The result of a candid enquiry will be this, that the House of Commons, which ought to be the guardian of the liberties of the people, may, by corruption, become the means of their destruction. And when men unblushingly and publickly avow that *property*, and not *per-*

sons are the objects of parliamentary representation, we may suspect that the fabric of such society is hastening to decay, if not dissolution.

PARNASSUS, GRASS OF, or *Parnassia*, a plant indigenous to the bogs of our own country, having single terminal flowers, white, streaked with yellow; it is sometimes cultivated.

Paroquet. See PARROT.

PAROTID GLAND, a large conglomerate and salival gland, situated behind the lower jaw, under the ear; its excretory duct opens into the mouth, and is called, from its discoverer, the *Stenonian* duct.

PAROXYSM, a fit; a periodical exacerbation of a disease.

PARRA, or JACANA, a genus of birds, comprehending sixteen species, natives of the warmer parts of Asia, Africa, and America. The following are the chief:

The *Chilensis*, or Chilese jacana, inhabits Chili; bill two inches long; neck, back, and fore-part of the wings violet; throat and breast black; wings and short tail brown; size of a jay; spurs on the wings half an inch long, with which it defends itself; noisy; feeds on worms, &c.; builds in the grass; eggs four, tawny, speckled with black.

The *Jacana*, or Chesnut jacana, is ten inches long; inhabits watery places of South America; noisy; flesh good.

The *Chavaria*, or Faithful jacana, has a crest on the hind head, consisting of about twelve black feathers, three inches long, pendent, body brown, wings and tail blackish. Inhabits the rivers and inundated places near Carthagena, in America. The natives keep one of these birds tame, to wander with the poultry, and defend them against birds of prey, which it does by means of the spurs on its wings; it never deserts its charge, bringing them home safely at night. Size of a cock; stands a foot and a half from the ground.

PARROT, or *Psittacus*, a genus of birds, comprehending one hundred and seventy species; the bill is hooked; the upper mandible as well as the lower, in the whole tribe, is moveable; and is not connected, and in one piece with the skull, as in most other birds, but is joined to the head by a strong membrane on each side, which lifts and depresses it at pleasure; this formation of the bill is a distinguishing characteristic of the parrot race; feet formed for climbing. The genus may be subdivided into those having a long wedge-shaped tail; and those with a short tail equal at the end, including the cockatoos and lories generally, but not altogether.

Of all foreign birds, this genus is the best known to Europe; from its docility, and the beauty of its plumage, it has been imported in great numbers; in those countries where it is indigenous, it is the most numerous of all the feathered tribes. Although it lives in the temperate climates of Europe, it does not frequently breed there; and its spirits and longevity are also diminished. Parrots are so various in size, and in their colours, that it is impossible for language to follow their countless gradations. It is remarkable, that of all the different species of parrots that are known and described, there is not one common to the new and the old world: A proof that the parrot is incapable of making long flights; so that almost every island in the West Indies is distinguished by parrots peculiar to itself.

The parrot, in its wild state, feeds on almost every kind of fruit and grain. Of all foods, however, they are fondest of the carthamus, or bastard saffron, which, though strongly purgative to man, agrees with them very well. The parrot is subject to various disorders: many of them die of epilepsy and gout. They are, however, remarkable for longevity; some have lived sixty years; from twenty to thirty years may be considered the more common period of their lives, when well kept; after which time, the bill becomes generally so much hooked, that they are deprived of the power of taking food. They can only be successfully tamed, when taken young. The following are chief:

The *Cristatus*, or Yellow-crested cockatoo, is white, with a yellow crest; the gentlest and most docile of the tribe. Found in all the tropical regions of India. Eighteen inches long; crest five. The cockatoos are the largest parrots of the old continent. The *aterrimus*, or Black cockatoo, is more than a yard long; found chiefly in New Holland. The *erythacus*, Hoary parrot, or Jaco, of which there are several varieties, is most frequently imported into Europe at present, and when properly taught, is a great adept in language. Body a beautiful grey: a native of Africa. The *garrulus*, Ceram, or Scarlet lory, of which there are many varieties, is a native of the Moluccas; occasionally brought to Europe. The *Guineensis*, or Yellow-breasted lory, is found chiefly in New Guinea, and the Molucca islands. The *Alexandri*, or Alexandrine paroquet, is green; five or six varieties; found in southern Asia and the island of Ceylon. The *macao*, or Red and Blue macaw, is one of the grandest of the parrot tribe; found between the tropics in America. Eggs two; about the size of a pigeon's; male and female share alternately the labours of incubation. The *œstivus*, Amazon, or common parrot, is green; many varieties; natives of Amazonia; these, as well as the criks, of all the American parrots, are most easily taught to speak. The *ochrocephalus*, or Yellow-headed parrot, belongs to the class called criks by the French writers. The *Paradisi*, or Paradise parrot, is a very beautiful species of popinjay. The popinjays are all distinguished from the tribes above-mentioned, in having no red on their wings. The *aureus*, or Golden-crowned paroquet, is a beautiful bird. The class of paroquets is extremely numerous and diversified; when properly tamed, they are good speakers. One of this tribe laid once in England, five or six small white eggs.

PARSLEY, or *Petroselinum*, a species of the genus APIUM, of which there are three: the *graveolens*, or Celery, see CELERY; the *prostratum*, a native of New Holland, and the first mentioned, or Common parsley.

Common parsley, of which there are three varieties, is a biennial, native of Sardinia, but now of general growth among ourselves. It is propagated by seed, which should be drilled early in the spring, as it remains several weeks under ground. The leaves of this plant is an agreeable culinary vegetable, but has long ceased to be considered of any value as a medicine. It is eaten by sheep, rabbits, &c. but we are not aware that its culture has been advantageously adopted in the large way.

PARSLEY, the BASTARD STONE, HONEY-WORT, or *Sison*, a genus of plants consisting of six species, four natives of North America, Egypt, Siberia, and Portugal; two, the *amomum* or Common honey-wort, with pinnate leaves, and the *segetum*, or Corn parsley, also with pinnate leaves, found in our own country.

PARSLEY, the MACEDONIAN, or *Bubon*, a genus of plants comprehending five species, natives of Africa and the south of Europe: the *macedonium*, with horizontal leaves, is a biennial plant, in its native soil, Macedonia; but as it seldom blossoms in this country till the third or fourth year, it is with us triennial, or even quadriennial: the plant perishes as soon as it has flowered. The *galbanum*, or African ferula, rises with an erect stalk, to the height of eight or ten feet, and ligneous at the bottom; flowers yellow; from every part of the plant when broken, issues a thin cream-coloured milk, which smells like galbanum; and from incisions in the stalk, the gum galbanum is obtained. See GALBANUM. The *gummiferum*, has a chervil-like leaf and ligneous stem, about the height of the last, and like that yields a juice similar to galbanum. The *levigatum*, is a Cape plant. The *rigidus*, or Rigid ferula, is a native of Sicily with linear stiff leaflets.

PARSLEY PIERT, or *Aphanes arvensis*, a low indigenous plant, growing in corn-fields, and flowering from

May till August. It is relished by sheep; and is strongly diuretic.

PARSLEY, THE WILD, MARSH-MILKWEED, or *selinum palustre* one of the nine species of SELINUM, a genus of plants, some herbaceous, some subfruticose, natives, for the most part, of the south of France. The first-mentioned species is common to our own marshes; the root is aromatic; it is used as a spice in Russia.

PARSNIP, or *Pastinaca*, a genus of plants comprehending three species, as follow: The *lucida*, or Lucid parsnip, with simple, heart-shaped, lobed, lucid, and acutely crenate leaves; a native of the south of Europe. The *opopanax*, or Rough parsnip, with pinnate leaves, and yellow flowers, appearing in July; a native of the south of Europe; the inspissated juice of the stem is the opopanax of the shops. See OPOPANAX.

The *Sativa*, or Common parsnip, has leaves simply pinnate, downy underneath, sometimes glabrous: supposed to be merely the wild parsnip found in our hedges, but improved by culture. Its roots are sweet and nutricious, and esteemed as an article of food. They possess an aromatic flavour, more especially those of the wild plant.

Parsnips are propagated from the seeds, which should be sown in February or March, in a rich mellow soil, which must be dug deeply, that the roots may be able to run without hindrance. When they are grown up a little, they must be thinned to about a foot distance, and carefully kept clear of weeds. They are finest tasted when the leaves begin to decay. They should be preserved in sand, for winter and spring use.

The parsnip has been occasionally cultivated for the purposes of husbandry, though on a very limited scale. From its being capable of withstanding the severity of the winter season, it is probably better adapted to the northern parts of the island. And from its easy culture, and the great quantity of food which it affords, it would seem to demand more attention than has hitherto been bestowed upon it by the British farmer.

The soils most suited to this plant are those of the rich, deep, mellow, loamy or sandy kinds. On the gravelly and the pure clayey soils they can never be cultivated to much advantage.

The land for parsnips requires the same preparation as for carrots; but manure is not so necessary for this crop as for many others. About five pounds of seed are considered sufficient for an acre of land; it is usually sown broadcast. The general management of parsnips is much the same as for carrots, see CARROTS. Besides the root, which is cut, chopped, and given with dry meat to cows, horses, and oxen, the tops afford much green food for cattle and hogs, either after being cut off when taken up, or consumed in the field; in the latter method, the proper time for turning the animals upon them is when they first begin to shrink and grow dry.

PARSNIP, the WATER, or *Sium*, a genus of plants comprehending nineteen species, mostly natives of warm climates, the greater number of the Cape; five indigenous to our ditches, moist grounds, or meadows. Of these one only, the *sisarum*, or *skirret*, is cultivated. It has pinnate leaves; the root is a bunch of fleshy fibres, each about as thick as the finger, but very uneven, covered with a whitish, rough bark, and has a hard core or pith running through the centre. In flavour and nutritive qualities, it approaches the nearest to the parsnip: half a pound of this root has produced one ounce and a half of sugar. It is a native of China; but may be propagated either by sowing the seeds or by planting the slips and offsets; the first is the best method. The seed should be sown in February; the young plants must be kept clear from weeds. The leaves decay in October, and from that time till the middle of March, the roots are in season.

The *Nodiflorum*, or Procumbent water parsnip, is an indigenous perennial, common in ditches and brooks.

The expressed juice of this plant has been recommended for cutaneous and scorbutic eruptions in doses of three or or four ounces every morning to adults; and to children in the dose of three large spoonfuls, twice a day; but its efficacy in these diseases wants confirmation.

PARTHENIUM, or BASTARD FEVERFEW, a genus of plants comprising two species only; the *hysterophorus*, cut-leaved bastard feverfew, or wild wormwood, an annual of the West Indies, flowering with us in July; and the *integrifolium*, or Entire-leaved parthenium, a perennial plant of Virginia.

PARTRIDGE, or *Tetrao*, a genus of birds, comprehending seventy-three species, having, near the eye, a spot, which is either naked or papillous, or rarely covered with feathers. It may be thus divided: *Grous;* spot over the eyes naked; legs downy: feet in some four, in some three-toed;—*Partridge* and *Quail;* orbits granulated; legs naked; the partridges, in the male, armed with a spur at the legs; the quails destitute of a spur;—the *tinamon;* orbits with a few feathers, legs naked, four-toed, unarmed. We shall give a few examples of each tribe:

The *Urogallus*, Wood grous, or Cock of the wood, has a rounded tail; armpits white: inhabits the mountainous and woody parts of Europe, northern Asia, and our own country.

The *Tetrix*, Black game, or Black grous, is violet black; tail forked; several varieties; inhabits mountainous and woody parts of England, and Europe at large.—The *Scoticus*, Red grous, Red game, Moor-cock, Moor-fowl, is transversely streaked with rufous and blackish; six outer tail-feathers on each side blackish.

The *Lagopus*, Ptarmigan, or White game, is cinereous, toes downy; inhabits the Alpine parts of Europe and Siberia; from fourteen to fifteen inches long; stupid, and burrows under the snow.—The *cupido*, or Pinnated grous, has the body tawny, waved with black; back of the neck, with supplemental wings; female without such wings; inhabits North America; less than the partridge; feeds on acorns and the leaves of the *kalmia latifolia*, or American dwarf laurel, whence it has occasionally proved poisonous at Philadelphia: the male, at sun-rise, erects his neck-wings, and sings for half an hour. The *alchata*, Pin-tailed grous, or Ganga, is varied with olive, yellowish, black, and rufous; belly white; two middle tail-feathers twice as long as the rest.

The *Perdix*, or Common partridge, has under the eyes a naked scarlet spot; tail ferruginous, breast brown, legs white; five other varieties: greyish white; entirely white; collar white; body brown; chin and upper part of the throat tawny. Inhabits Europe and Asia; thirteen inches long; frequents corn fields and pastures; feeds on green corn, seeds, and insects; lays from fourteen to twenty yellowish, or greenish grey eggs.—The *rufus*, Greek, or Red partridge, has the bill and legs blood red; inhabits southern Europe and the Greek islands; another variety found occasionally on the Norfolk and Suffolk coasts, called red-legged partridge; a third variety with a chesnut collar, with white round spots, called Barbary partridge.—The *coturnix*, or Common quail, has the body spotted with grey; another variety much larger; inhabits the whole of the old world; seven and a half inches long; migrates; feeds on corn; calls nearly all night: eggs whitish, with irregular rusty spots.—The *virginianus*, or Virginian quail, inhabits the woods of America; perches on trees; rather less than the common partridge.—The *Kakelik*, has the bill, eye-brows, and legs scarlet; inhabits China; size of a pigeon; is named from its note *kakelik*.

The *Major*, or Great tinamon, has a yellow body, legs yellowish brown; bill black; back and tail with black spots; inhabits the woods of South America; eighteen inches long; roosts on the lower branches of trees; feeds on worms, insects, fruits; builds twice a year at the root of a large tree, and lays from twelve to fifteen green eggs.

All these are properly called *game*. The cock of the woods is two feet eight or nine inches in length; the weight of the male, which is considerably larger than the female, is from twelve to fifteen pounds. The two sexes differ greatly in colour as well as size. The head, neck, and back of the male is elegantly marked with slender lines of grey and black, running transversely; the upper part of the breast shining green; the rest of the breast and belly black, mixed with some white feathers; tail black, with a few white spots; the female is red on the throat; head, neck, and back marked with bars of red and black; belly orange; tail ferruginous, barred with black; length twenty-six inches. These birds never pair: but the cock calls the females together, by a peculiar cry which he makes, perched upon a tree. Next to this species, in point of size, is the black game. The red game is smaller than the black game; the ptarmigan is the smallest of the rough, or woolly-legged game. The pin-tailed grous is thirteen and a half inches long; seems to be a gregarious bird. The most common species of the partridge are the grey and the red; the former appears to frequent Britain alone, or nearly so. The males of this tribe are more numerous than the females: they frequently fight with each other. Quails are excellent game; their flesh is fat, juicy, and nutritive, and every where deemed a delicate dish. They are taken by calls. In some parts of England they remain the whole year; and when the frost and snow obliges them to quit the stubble-fields of the mid-land counties, they retreat to the shore, and feed on sea-weeds. Quails only lay, in England, six or seven eggs; in France or Italy above twice that number: of the tinamons there are only five known species; they vary in size from nine to eighteen inches.

PARTURITION, in Midwifery, that process which is usually and commonly denominated labour.

The period of gestation of the female of the human subject is liable to some variation: the usual term is forty weeks, or nine calendar months; but there are well authenticated instances in which this period has extended to eleven, twelve, or even more than twelve months; such instances are, however, rare; but that females very often exceed nine months, there is no question.

It cannot be sufficiently impressed upon the female part of the community, that parturition is a perfectly natural operation, and that where the mother is in good health, and no accident has happened to her during the period of her gestation, and where she has not omitted to take a suitable quantity of exercise proportioned to her ability, that no assistance whatever is necessary, in order to enable her to complete that operation about which many females live both in fear and in dread. Surely nature has not been, in this particular, less kind to us than to the inferior animals. But on this subject ladies too often suffer their imaginations to range at large; and our habits and our manners, unfortunately, assist in increasing that sensibility which imparts, sometimes, it is true, the most exquisite pleasure; but which, on the other hand, when pain or when evils are to be endured, is but the minister to our distress. Nothing, perhaps, therefore, would so well enable a female to pass through the period of parturition with the least pain and inconvenience, and with perfect safety, as the conviction that, in nine cases out of ten, no assistance whatever is necessary; but, nevertheless, it is wise to provide for the worst; and, therefore, if an intelligent female midwife cannot be obtained, and be in readiness, a male accoucheur ought to be in attendance. Such, however, is the fashion, that we suppose few timid females would consider themselves safe in the hands of one of their own sex.

In all cases of difficult parturition, we presume, of course, that the best assistance will be at once obtained; and therefore, on this subject we need not enlarge; but we ought to remember, that nature, even in the most difficult case, will often perform wonders. The room in which a parturient female is, should be as airy as possible; and the less food is taken during this period the better; if any be desired, the simplest and best, upon ordinary occasions, is tea and dry toast: nor should any idle gossips be permitted to pour their prognostications, to the great discomfiture and injury of the patient.

Perhaps in nothing can the comfort and convenience of a parturient female be more effectually promoted than in having a steady, experienced, and intelligent nurse; in the choice of which too much care cannot be taken. A good nurse will take care that, previous to the actual process of parturition, a variety of little things which are necessary, either for convenience or comfort, have been done; one of such is that of making the bed in a suitable way, so that the patient may lie comfortably and conveniently, both at the time, and after her labour. If the patient be used to a mattress she may lie on one; it is the best sort of bed; but if a feather-bed it should be made as nearly as possible like a mattress, by beating the feathers away to the other side of the bed. Upon this should be laid a blanket, and a sheet, and upon these a common sheepskin, or a piece of oil-cloth; over this a blanket doubled to four thicknesses; and lastly, a sheet upon this four times doubled, only lengthwise; this last sheet is to be laid across, and secured to the bedstead by tapes. The nurse should also know, that till the membranes are ruptured, or at least till the pains are so frequent and powerful as to indicate their soon becoming ruptured, the patient should not be put to bed. The future operations of the process will, of course, be left to the midwife; but suppose that a female should be taken in labour, the child be born, and no midwife at hand; a very possible, and indeed no very uncommon occurrence?

It would be very extraordinary indeed if some female, either a nurse, servant, or friend, should not be found attending in such a case, and it will be no very difficult task to give directions by which both the child and the mother may do well. As soon, therefore, as the child is born, breathes, and cries, the umbilical cord, or navel string, should be tied. To do this, about ten threads must be folded together, in order to make a ligature; with which the navel string should be tied moderately tight, at about two inches distance from the body, and again, the same distance from the last knot; of course towards the placenta, to which the navel string is attached, and possibly not yet discharged from the uterus. The navel string is then to be cut between the two ligatures, and the child removed from its position. If the placenta should be discharged, that also should be removed; but if it still remain in the uterus, no violence must be used by pulling the umbilical cord; in general it is soon expelled without much trouble or inconvenience. If, however, after some time, the placenta should not be expelled, the umbilical cord may be gently drawn; and if it be completely separated from the uterus it will soon be expelled.

After the child and placenta are expelled, it is the common practice to make some degree of pressure upon the abdomen, by a bandage round it, with the intention of promoting a proper circulation of the blood; and a bandage is, upon the whole, the safest course; but a bandage, in healthy females, is by no means necessary, and may very often be omitted without inconvenience.

On the subject of parturition it should be always impressed upon the attendants, as well as the patient herself, that it is a process which should never be hurried; that nature should be waited upon, not forced; and that every thing which contributes to the comfort and ease of the female, both mentally and corporeally, should be most carefully, kindly, and studiously administered. The presence of an intelligent, experienced, and affectionate matron, is, at such times, of infinite importance, whose kindness and suggestions cannot fail in having the best effects; but young and inexperienced females are most commonly injurious.

For the mode of treatment of the infant after it is born, see INFANCY.

The mother, in ordinary cases, after

her accouchement, and suitable rest from her fatigue, requires nothing but common care and prudence to insure her return to her usual occupations. It sometimes, however, happens that the discharges which take place for some time after delivery, are either small in quantity, or totally suppressed; and that the bowels have not returned to their customary action, by evacuating their contents. Attention to these circumstances is indispensably necessary: for should such suppressions continue, disease of the most dangerous kind may be the result. See PUERPERAL FEVER.

In regard to the bowels for a day or two after delivery, if no evacuation takes place, it is not of much importance, provided the other discharges are going on well; but on the third day, at farthest, if no natural evacuation be obtained, a dose of castor oil should be given. Should there be swelling and tension of the abdomen, with a partial or total retention of the discharges from the uterus, warm fomentations will be found very serviceable. But a medical attendant should, in such cases, be consulted.

In regard to the food of child-bed females, for some days immediately following their accouchement, a spare diet, chicken broth, and warm caudle, will be the most proper, although healthy females will often take more stimulant nutrition, not only with impunity, but with advantage. It cannot be too often repeated, that the child should be put to the breast as soon as the mother has recovered from the immediate fatigue of her labour. See BREASTS, INFLAMMATION OF, and INFANCY.

After pains generally arise from the retention of the discharges, or *lochia*; and sometimes opiates will be necessary to alleviate them; but, in general, it is better to avoid such medicines, and to take those of a more opening kind, by which the evacuations will be more likely to be promoted.

Should there be an immoderate discharge of the lochia, our remarks under the article menstruation, relative to this subject, will be found deserving attention. See MENSTRUATION.

Infants are sometimes born in a state of *apparent death*, and may be often recovered from such state, if suitable means be adopted immediately after their birth. They may, however, be in a state of *asphyxia*, or *apoplexy*. It is necessary to distinguish between these two cases, because the treatment proper for one is injurious to the other.

The *asphyxia* of new-born infants may arise from a tedious and painful accouchement, attended with considerable flooding; from the delicacy of the infant; or, more frequently, from pressure upon the umbilical cord. The infant, in this state, is pale, discoloured, or livid; the flesh is flaccid; its limbs flexible, and without motion; it is impossible to feel either the pulsation of the heart, or at the umbilical cord: it does not breathe, but is, to all appearance, dead.

However hopeless the state of the infant may be, the following proceedings must be immediately adopted.

The umbilical cord must be left untied and uncut; especially if there exists no bleeding, and the placenta be not detached from the uterus, and a slight degree of pulsation is felt in the umbilical cord. The child should be placed upon the side, taking care to raise the head, and leaving the face fully exposed to the air; the other parts of the body should be covered. The umbilical cord must not be *pressed*. The mouth and nostrils must be examined: if there be any mucous matter, or clots of blood, which may prevent the air from entering the lungs, introduce into the mouth either the finger, a feather, or a piece of lint steeped in salt and water, and apply it lightly, so as to detach all the matter which may obstruct the passage of the air. The lungs must also be inflated, as directed under the article CHARCOAL. The back and the bottom of the feet should be rubbed with a soft brush; the other parts of the body with cloths steeped in warm wine; light pressure may be made upon the umbilical cord, breast, and stomach. A small clyster, made with warm water and a little vinegar, or a few grains of salt, should be administered. If these means should not prove successful, the infant must be placed up to its arm-pits in warm-water, to which a little wine has been added. A small cupping-glass may also be applied. Volatile alkali, concentrated vinegar, and other stimulants, the action of which is very energetic, must be omitted. These means must be persisted in for a long time, suspended at intervals, and varied in every way. If the placenta is detached, and there is no pulsation in the umbilical cord, it should be tied and divided, as directed above, and the infant removed from the mother, and treated in the manner we have before directed.

The causes of *apoplexy*, in new-born infants are a severe labour, compression of the head in the pelvis, or by instruments, or strangulation by the folds of the umbilical cord. In this state the infant gives no signs of life, is in a profound lethargy, and immoveable; the face is black, livid, and swelled; the skin is discoloured; the breast gorged with blood, which appears extravasated; sometimes there is upon the head a soft tumour, filled with serous matter.

In this case, the umbilical cord should be immediately cut, so as to allow the blood to flow: to promote this effect, the chest and stomach must be rubbed with a warm cloth; the head during this time being kept elevated. One or two leeches must be applied behind the ear, if a copious flow of blood should not follow the division of the umbilical cord. When leeches cannot be obtained, one of the veins of the head or neck must be opened with a lancet. If there be a tumour in the head, an incision must be made with a bistoury, and the flow of blood increased by the application of compresses steeped in warm water. The infant should also be plunged into a warm bath, to which some gentle stimulating fluid, such as wine, brandy, or vinegar, has been added. During the time of immersion in the bath, the back must be rubbed with a hot cloth.

Party-wall. See BUILDING.

PARYS, a mountain in the isle of Anglesea, famous for its copper-mine, which is not wrought in the common manner of subterraneous mines, but like a stone quarry, open to day: the ore is a sulphate of copper; the quantity raised is prodigious. See COPPER.

PASSION, or the PASSIONS, are generally considered those affections of the mind which are evinced by more or less agitation or action. The term passions is, however, very indefinite.

The passions usually so called are ambition, anger, antipathy or aversion, curiosity, fear, hope, joy, love, shame, sorrow, sympathy, and wonder. All these have been subdivided into numerous varieties and deviations.

All the passions appear to be merely the effects of pleasurable or painful sensations of the body, or pleasurable or painful emotions of the mind, exemplified, it is true, in different ways, but uniformly referable to one or the other of these orders. See AMBITION, ANGER, CURIOSITY, &c. &c. See also EDUCATION, and MIND.

PASSION-FLOWER, LOVE IN A MIST, or *Passiflora*, a genus of plants comprehending forty-six species, all natives of the West Indies, or South America; they are thus subdivided:—leaves undivided;—leaves two-lobed;—leaves three-lobed;—leaves many cleft. The following are cultivated:

The *cærulea*, or Common blue,—the *incarnata*, or Rose-coloured—the *lutea*, or Yellow—the *serratifolia*, or Notch-leaved — The *maliformis*, or Apple-fruited—the *quadrangularis*, or Square-stalked—the *alata*, or Wing-stalked—the *laurifolia*, or Bay-leaved—the *multiflora*, or Many-flowered,—the *rubra*, or Red-fruited—the *muracinja*, or Moon-shaped—the *vespertilis*, or Bat-winged—the *rotundifolia*, or Round-leaved—the *ciliata*, or Ciliated—the *suberosa*, or Cork-barked—the *nolose-*

rica, or Silky-leaved—the *glauca*, or Glaucous-leaved; and the *minima*, or Dwarf passion flower.

As all the above species are natives of warm climates, few of them, except the *cærulea*, will succeed in the open air in our own country; and even this requires a warm situation, and often loses its branches in severe winters. The fruit of the *maliformis*, is esteemed a delicacy in the West Indies. The fruit of the *laurifolia*, has a delicious smell and flavour, and is excellent for quenching thirst, abating the heat of the stomach, fevers, &c.

The passion-flower is propagated by cuttings plunged in a hot-bed in the spring.

PASTE, a composition of flour and water boiled to the consistence of pap, and when cold, laid upon paper, in order to fasten it to walls, and other bodies. When a considerable degree of adhesion is desired, such as in paper-hangings, &c. glue in the proportion of two ounces to a pint of water, should be dissolved in the water previously to mixing the flour with it; and in order to prevent the paste from being lumpy, the flour should be mixed with a small portion of cold water first, then stirred and gradually thinned, by the addition of more water, so as to be of a uniform consistence.

Pasteboard. See PAPER.

PASTRY, food made with paste, such as pies, puddings, dumplings, &c. To plain, well-boiled pastry, when not abounding in too much fat, and other admixtures, as food for persons in health, and eaten with a suitable portion of animal aliment, there is certainly no objection; but to those whose stomachs are dyspeptic, pastry should be at all times very sparingly administered, and baked pastry not at all; to such, baked or roasted fat is always more or less injurious, and in pastry it appears to acquire, when baked, a more than ordinary degree of injurious acrimony. Many of the diseases and complaints of children may be traced to the immoderate use of baked pastry, and of such, the pastry of the pastry-cooks is most to be avoided.

PASTERN, of a horse, that part of the leg between the fetlock joint and the hoof.

PASTERN-JOINT. The fetlock joint.

Pasture. See HUSBANDRY, MOWING, MEADOW, OX, &c.

Patella. See KNEE.

PATENT, or LETTERS PATENT, are writings sealed with the great seal of England, by which a person is authorized to do, or to enjoy, any thing which of himself he could not do.

Letters patent for new inventions are obtained by petition from the crown; they go through many offices, and are usually granted for the term of fourteen years, upon condition that the patentee specify his invention, or improvement, in such a manner, that the public may receive the benefit of it, and may be at liberty at the expiration of the period of the exclusive privilege, to practise or employ the invention or improvement.

A variety of patents are annually taken out for novel inventions, or improvements upon former ones, so that a list of the patents, obtained during the last fourteen years, is very formidable and imposing. It cannot be disguised, however, that many patents are obtained of a very trifling nature, and many others are wholly inadequate to the purposes for which they are specifically obtained. Patents are very often the medium of great imposition and fraud. See JAMES's POWDER and QUACK MEDICINES.

PATHOLOGY, the doctrine or science of medicine, as far as relates to the descriptions, causes, symptoms, and cure of diseases

PATIENCE, the power of suffering; it also implies a calm state of endurance, either of pain or labour. Patience is a state of mind the inculcation of which can scarcely be enforced too strongly. See MODERATION.

Patience Dock. See DOCK.

PATTENS, a well-known contrivance, worn occasionally by females, to keep the feet free from dirt and wet; they are, however, always attended with danger in the wearing, and it is extremely doubtful whether that is counterbalanced by their convenience; indeed, the wearing of pattens appears to be on the decline.

PATRIOTISM, a love of one's country. The love of our own country, and the efforts to improve its social and moral well-being, are highly meritorious, and deserving of commendation, as long as those efforts do not trench upon the rights of other communities; but that patriotism which aggrandizes our own country at the expense of the happiness or wealth of others, and often merely, too, because we may happen to have the physical power to compel submission to laws which we ourselves choose to make, is founded in error, and highly injurious to the best interests of man. In a word, genuine patriotism is genuine benevolence; and is distinguished from universal benevolence only in the difference of its extent.

PEA, or *Pisum*, a genus of plants consisting of four species, all natives of Europe, one indigenous to our own coasts.

The *Sativum*, or Common pea, has the petioles cylindrical; stipules rounded and crenate at bottom; peduncles many flowered. Four other varieties—the common marrow fat—with the peas green—with the husk eatable—with the flowers in umbels. The sub-varieties are almost innumerable. The more valuable may be divided into two kinds, early and late. Of the early kinds are, the various hotspurs, the early Charlton, the early frames, Leadman's dwarf, the Fan Spanish dwarf, the Pearl, the Cluster, the Royal green, the Dwarf, and the Sugar pea. The late kinds are the Spanish morrotto, Nonpareil, Marrow fat, Dwarf marrow fat, the Sickle, the Rose or crown, the Rounceval, the Longbearing, the Green field, the White field, and the Pig pea.

As it is now the fashion to have peas very early, several of the former sections are raised on hot beds. The method of doing this is to sow the peas under warm hedges, or walls, about the middle of October. When the plants are come up, their stalks are to be kept earthed up, and thus they are to remain till the beginning of February, covering them against severe frosts with peas-haulm or other light covering. In January, or February, a moderate hot-bed must be made: the dung should be laid about two feet thick, and carefully beaten down, and covered about six inches deep, with light fresh earth; and when the frames have been set on about four days, the plants must be planted in the earth at about a foot distance in rows, and placed in each row at about two inches from one another. They must be watered and shaded till they have taken root, and then they must have as much air as possible; when they begin to fruit they should be watered more frequently. The common dwarf pea is the sort always used for this purpose.

The first sort of pea which should be sown to succeed those in the hot-bed, is the golden hot-spur. These should be sown in warm borders in October, the same as those for the hot-bed, and be treated every way in the same manner; but as in the spring they are liable to be destroyed by slugs and other vermin, it will be advisable to throw a little slacked lime upon them; and, lest this crop should miscarry, two others should be sown after them at the distance of a fortnight from each; after which no other should be sown till January; and after these, others should be sown at the beginning and end of February. To succeed these, the Spanish morrotto, which is a large pea, should be sown in rows two feet and a half distant, and the peas dropped at an inch or two apart; a fortnight after this another crop should be sown with this or some large pea, and thus continued every fortnight till the beginning of June.

The *Arvense*, with four-leaved petioles, stipules crenate, and peduncles one-flowered, is often cultivated, though less frequently for general use.

The *Maritimum*, or English sea pea, has the petioles flattish on the upper side; stem angular; stipule narrow-shaped, and peduncles many flowered.

It is found wild upon the coast of Sussex, and in several other maritime counties; it is nearly allied to the genus *lathyrus*, or the sweet pea.

The *Ochrus*, or Yellow-flowered pea, has decurrent, membranaceous, two-leaved petioles; peduncles one-flowered; a native of Crete and Italy; flowers pale yellow, small; pods two inches long; the peas may be eaten green, but, unless gathered when very young, they are coarse, and never so good as the common pea.

All these may be sown and managed as the common garden pea.

Peas, as an *Agricultural crop*, are less certain than most others. But from such crops, when full, having a tendency to improve the lands on which they are grown, as well as to render them clean and free from weeds, they are cultivated to a considerable extent in many districts of the kingdom. This crop may be grown upon almost any kind of soil, but succeeds best on such as are dry, and possess a middling degree of lightness, with a tolerable mellow condition, having a portion of calcareous matter in their composition; but strong and new broken up clayey soils will often be found to produce large crops of peas. They may also be grown after wheat, oats, and most other kinds of grain. But after whatever crops they may be cultivated, the land should be reduced into a tolerable state of pulverization; and, on the more stiff lands, this should be effected by autumnal plowing, so that by scarifiers and scufflers in the spring, the peas may be sown without any further ploughing. The best husbandry seems to decide, that peas want no manure whatever.

The time of sowing must, of course, depend upon the intentions of the cultivator. In the neighbourhood of large towns, when the peas are designed for podding, in order to be sent green to the market, the periods from January to the latter end of March are the best. But for the crop which is designed to be perfected on the land, March will, in general, be the best time for the grey pease; and when put in at a later period, in April, the white, or more early kinds, should always be preferred. The proportion of seed must also vary. The usual quantity is from two and a half to three bushels and a half per acre. They are sometimes, although not often sown broadcast; the most usual method is either by drilling or dibbling. The proper distance for drilling is in rows about twelve or sixteen inches apart for hand-hoeing; and where horse-hoeing is employed from two to three feet; the depth to which the seed is deposited is from two to three inches; when they are dibbled they are planted at about four inches apart.

When peas are sown broadcast, or dibbled, they do not admit of any after culture; but when they are drilled, hoeing them in the early periods of their growth is very advantageous, and should be performed twice. The usual average produce of dry peas per acre is about thirty bushels, but we have known double that quantity produced on some newly broken up, strong, clayey lands. Peas are often employed for fattening hogs. The haulm is also given to horses and cattle. See STRAW.

Green peas are generally esteemed a luxury, and as they are usually eaten with animal food, they do not appear to possess, when young and tender, any unpleasant properties; but when old and difficult to boil, they are well known to be flatulent and indigestible. From their analysis by Sir HUMPHRY DAVY, they contain considerably more starch than beans, less gluten, and some saccharine matter, so that we should be disposed to consider them upon the whole, as they are found to be, more suitable for food than those leguminous seeds. It is necessary, however, when they are eaten in their dry state, that they should undergo long boiling to be rendered fit for the human stomach. Perhaps split peas well boiled, and eaten in the shape of pudding, is one of the best methods of preparing them. But the valetudinarian and dyspeptic should generally avoid them.

Pea, everlasting. See PEA, THE CHICKLING.

PEA, the CHICKLING, or ***Lathyrus,*** a genus of plants, consisting of thirty-six species, chiefly leguminous, natives of Europe, a few of Asia, Africa, and America; seven indigenous to the fields, pastures, and hedges of our own country. Some have their peduncles one-flowered, some two-flowered, some many flowered. The following are most worthy of note:

The *Latifolius*, or Everlasting pea, is a native of our woods, and cultivated with ease in our gardens by seed. A well-known flower.

The *Odoratus*, Sweet-scented pea, or Sweet-pea, is a native of Sicily, and well known in our gardens. There are many varieties; with white flowers, dark purple, rose colour, &c. In order to have them blossom early in Spring, they should be sown in the Autumn, even as early as August; those which survive the winter, which most will in the southern parts of England without shelter, produce the best flowers in the spring. We may mention as an extraordinary circumstance, that from one plant of the autumnal sowing, we once obtained above two thousand perfectly ripe and dry peas. They delight in a clayey soil.

PEA, the HEART, or *Cardiospermum*, a genus of plants, consisting of four species, natives of the East, West Indies, and Guinea. Of these, the *halicacabum*, Indian heart-pea, or heart seed, is a very elegant plant, flowering in July and August, and though an annual of very slender growth, it climbs to the tops of the tallest trees in the forests of Jamaica.

Pea, the Heath. See VETCH, THE BITTER.

PEACH, or ***Amygdalus persica,*** a species of the almond-tree, which yields a fruit with a downy skin, too well known to need description. There is another variety of the same species, the fruit of which has a glabrous, or smooth skin, and also well known under the name of NECTARINE. They are both natives of Persia, and require exactly the same kind of culture and attention.

The chief kinds of peaches are the following: the early white nutmeg, early red nutmeg, early avant, early anni red magdalene, white magdalene, small mignon, royal gange, early purple, noblesse, large mignon, early Newington, royal Kensington, multa peach, montaulan, old Newington, bourdins, late purple, nivette, isle, bellegarde, rambouillet, rosonna, chancellor, la belle d'vitry, large admirable, monstrous pavy, late violet, superb royal, catharine peach, a fine large late fruit, la teton d'evenus, and the chevreuse.

The chief kinds of nectarines are these: Fairchild's early Newington, red romany, scarlet, murry, elruge, brugnione, late green, Peterborough, temple, golden, violet, and white.

Peaches and nectarines are propagated, if single blossomed, by inoculating them in the month of August into the St. Julian, magnum, or gage, or other free-growing plum stocks; and if double-blossomed, into the muscle plum. The stocks should be planted in the nursery when they do not exceed the size of a straw, and in the course of one or two summers they will be ready for the reception of the bud. See BUDDING.

For the production of fruit, this tree is usually trained against a wall, and indeed it will produce fruit no where else in this country, unless the branches are introduced into the hot-house, which they sometimes are. The double blossomed peach is, however, occasionally found in plantations, where it blossoms as an ornamental shrub.

They may be transplanted at any season of the year whilst the leaves are off, but the best season is just after the fall of the leaf, in mild open weather.

Peaches and nectarines form an agreeable variety of summer fruit.

For the method of pruning these trees, see PRUNING.

PEACOCK, or ***Pavo,*** a genus of birds, consisting of four species, as follow:

The *Cristatus*, or Crested peacock, of which there are three varieties: one with a compressed crest; spurs solitary;

another having the cheeks, throat, belly, and wingcoverts white; and another with the body entirely white. The plumage and tail of this magnificent bird are adorned with rich and various colours, but the most predominant is green of many different shades. This bird is originally a native of India, where it is found in vast flocks. It is now found in all the temperate regions of Europe, and in almost every part of the new world; and also in Africa. The peacock arrives at its full size and vigour in its third year. In these climates the female lays only four or five eggs, but in warmer regions twelve, sometimes double that number; their period of incubation is from 27 to 30 days. Their age extends to twenty years, or more. The cock requires from two to four hens. They are granivorous like other domestic fowls, preferring barley. The young only are esteemed good eating.

The peacock is, however, not upon the whole a desirable bird for the poultry yard; it being very troublesome and mischievous; and the cry which it makes is one of the most harsh and disagreeable which can be conceived.

The origin of the white variety of this species is not known, but it continues, it is said, white in every climate.

The *Bicalcaratus*, or Iris peacock, is brown; head sub-crested; spurs two. Inhabits China; rather larger than the pheasant.

The *Thibetanus*, or Thibet peacock, is cinereous, streaked with blackish; head sub-crested; spurs two; inhabits Thibet; twenty-five and a half inches long.

The *Muticus*, or Japan peacock, is blue mixed with green; head with a subulate crest; spurless, and size of the cristatus; inhabits Japan.

PEAR, PEAR-TREE, or *Pyrus*, a genus of trees, under which we shall include both the pyrus and sorbus of Linnæus; which together contain twenty-four species, chiefly natives of Europe, many of America, a few of Asia, and seven common to our own mountains, woods, or hedges. The principal species are the following:

The *Communis*, or Pear-tree, is lofty, branches upright, pendulous; leaves ovate, serrate; flowers corymbed, of a snow-white colour. A native of our own woods. The wild pear, however, the mother of all the orchard and garden varieties, is thorny, with white or reddish, deciduous, setaceous stipules. The varieties are almost innumerable: the chief are the muscadel pear of Metz, the imperial, the winter thorn, the long green winter, the white butter, the grey butter, the de la Motte, the savoury, the radish, the nonpareil bergamot, the egg, the green summer sugar, the summer thorn, the spicy muscadel, the Burgundy pear, &c. &c. The best kinds for making PERRY, are said to be those of Bosbury and Bareland, in Worcestershire, and the squash pear, as it is termed in Gloucestershire; to which may be added the John, Harpary, Drake, Lullum, and horse pears.

The *Malus*, Apple-tree, or Crab-tree. See APPLE, and CRAB-TREE.

The *Spectabilis*, or Chinese apple-tree, is a native of China, and highly ornamental when in blossom; flowers pale red, when open and semi-open; the buds of a much deeper hue; fruit sparingly produced, and of little value.

The *Prunifolia*, or Siberian crab, is a native of Siberia; there are varieties in the size of the fruit; it is generally small and of a reddish colour.

The *Coronaria*, or Sweet-scented crab-tree, is a native of America, where the inhabitants plant it to graft apples upon.

The *Cydonia*, or Quince tree, has a low, crooked, and distorted stem; fruit varying in shape in different varieties; a native of Austria.

The *Aira*, or White beam-tree, has roundish, ovate, cut, serrate leaves, with parallel veins, white-downy underneath; found wild on the rocky mountains of our own country.

The *Aucuparia*, Mountain-service, mountain-ash, quicken-tree, quick-beam, or roan-tree, is of elegant form, and slow growth; leaves pinnate; fruit bunches of berries of a bright red or scarlet; very ornamental, but soon eaten by the birds. See ASH.

The *Domestica*, True service, or sorb-tree, resembles the preceding; leaves pinnate; wood very hard; fruit pear-shaped, reddish, and spotted, extremely austere, not eatable till mellowed by frost or time; a native of our woods. There are several varieties, with apple-shaped, oval, turbinated, and compressed fruit.

The *Hybrida*, Bastard service, or mountain ash, is a middle-sized tree, with leaves pinnate at the base, white-downy underneath; fruit the same as the aucuparia, but somewhat larger.

The three last species form the genus SORBUS of several writers.

The first seven kinds are raised by grafting and budding upon any sort of pear-stocks; occasionally upon quince stocks, and sometimes upon white thorn stocks: the first answer best for general use and for large trees; the other two for trees of a more moderate size, for dwarfs and wall-trees.

The services are generally raised by seeds or layers; the first is the best method.

Pear-trees, planted either against a wall or in espaliers, should have thirty feet allowed as their interval. These trees commonly produce their blossom buds at the extremity of their last year's shoots; and hence they require a peculiar mode of pruning, as the common mode would take off the part which should bear the fruit, and produce unnecessary shoots from the same branch. Pear-trees ought, therefore, to be carefully examined in summer, and have their foreright shoots taken off, by which means the fruit will not be overshaded, and the trees will need but little winter pruning. The several sorts of summer pears all ripen best in espaliers, but the winter pears require a south-east, a south-west, or an east wall.

The quince-tree affords a great variety of fruit. The several sorts are easily propagated, either by layers, suckers, or cuttings, which must be planted in a moist soil; the mode by suckers is most objectionable. The cuttings should be planted early in the Autumn, and in dry weather must be often watered; the second year they should be removed into the nursery, and set in rows at three feet distance, and one foot asunder in each row. In two or three years more they will be fit to be transplanted where they are to stand, which should always be near a ditch or river, or in some moist soil, where the fruit will be larger, but in a drier soil smaller, better tasted, and earlier ripe.

All these different kinds of fruit are useful to persons in health, when eaten occasionally and in moderate quantity; but in general the valetudinarian and dyspeptic should avoid them; the saccharine matter which they contain, soon becomes, in such diseased stomachs, decomposed, and flatulence, and other unpleasant symptoms, are the necessary result.

PEAR, the GARLIC, or *Cratæva*, a genus of plants, consisting of five species, natives of India, the West Indies, and Sierra Leone. Of these, the chief is the *tapia*, an East Indian tree, rising thirty feet high, with ovate, pointed leaves, and panicled flowers. The fruit is smooth and round, the size of an orange, of a garlic smell, communicated to animals that feed upon it. The young vernal buds applied to the skin raise it in blisters. It may be propagated in our own country by seeds.

Pear, the prickly. See CACTUS.

PEARL, in natural history, a hard concretion, of a brilliant silvery or blueish white colour, found in some species of the oyster and muscle. Pearls are generally supposed to originate from a distemper in the creature which produces them. The fish in which they are usually found is the East Indian pearl oyster, as it is commonly called. All pearls are formed of the matter of the shell, and consist of a number of coats spread with regularity one over the other; they are exactly similar in composition to what is termed mother of pearl, and consist of 66 parts of carbonate of lime, and 24 of albumen. Pearls are worn chiefly for ornaments in dress, &c. See MUSCLE.

PEARL, MOTHER OF, is the shell of a fish of the oyster kind; it is extremely smooth on the inside, and of the whiteness and water of pearl itself. It has a lustre on the outside, after the first scales have been cleared off by aquafortis, &c. Mother of pearl is used for various trinkets, small spoons, &c. &c. See MUSCLE, and MYA.

Pearl-ashes. See POTASH.

Pearl-barley. See BARLEY.

Pearl, white. See COLOUR-MAKING.

PEARL-WORT, or *Sagina*, a genus of plants, comprehending five species, one a native of Virginia, the rest indigenous to our own country. The *procumbens*, Trailing pearl-wort, or Beak-stone, is an indigenous perennial, growing on walls, paved courts, &c. It is an elegant plant, and one of the smallest of the vegetable tribe, scarcely exceeding two inches in height; the flowers are greenish white.

PEAT, or PEAT-MOSS, called in some provinces of the kingdom, particularly in Somersetshire, *turf*, is an inflammable substance, obtained, most commonly, from the immediate surface of the earth, and for some feet immediately below it, in certain situations. In the lowland districts of Somersetshire, it forms a considerable article of fuel, for which purpose it is cut into large squares, and dried by the heat of the summer sun. It is unquestionably of vegetable origin: in many instances, peat-bogs are evidently the effect of decayed vegetables accumulating for ages in a fresh-water lake, so as ultimately to fill it up. It is of different colours; black, yellowish, &c. As fuel, the blackest and heaviest is most esteemed.

The difference between peat and vegetable mould is, that the last is derived from finer substances, as the leaves of trees, the remains of arable cultivation, and the roots, as well as the leaves and stalks of the finer grasses, which contain a larger portion of earthy matter, whereas peat is chiefly composed of various sorts of aquatics, and shrubs, and even trees; which, instead of rotting on or near the surface, are generally immersed in stagnant water, and only partially, or in a peculiar manner, decomposed. In some valleys, peat-moss has often a considerable proportion of vegetable earth, washed from the higher grounds.

Peat has been divided into fibrous; compact; bituminous; mixed with calcareous matter: with sand or clay; with pyrites; and with marine, *or sea* salt. Each of these, where they can be discriminated, requires different treatment in order to convert it into a soil, or into manure. Our limits, however, preclude our entering into these particulars; but they should be attended to by the practical agriculturist.

The improvement of peat bogs, and of all wet lands, must be preceded by draining. Soft black peat-earth, when drained, is often rendered productive by the mere application of sand and clay, as a top-dressing; when peat contains ferruginous salts, calcareous matter is absolutely necessary to fit it for cultivation; when marshes or bogs abound with the branches or roots of trees, or when the surface entirely consists of living vegetables, they must either be carried off, or burnt. In the last case, the ashes furnish ingredients calculated to improve the texture of the peat. For this soil soaper's ashes are also an excellent manure.

In converting peat into earth it is a rule to plough or dig it in autumn, that it may be effectually exposed to the winter's frost. If this labour be not commenced at a proper season of the year, and if the peat be once hardened by the summer's sun, it is hardly possible afterwards to divide it.

The crops best calculated for a reclaimed peat-bog, or moss, are oats, rye, beans, potatoes, turnips, carrots, coleseed, white and red clover, and timothy. Wheat and barley have succeeded on such lands after they have been supplied with abundance of calcareous earth; and the fiorin grass seems likewise to be well adapted to this soil when moderately surface-drained. See farther on the improvement of peat-lands under FEN.

PEBBLE, the name of a genus of fossils consisting principally of flint.

They are often cut into ornaments, and sometimes used as a substitute for glass in spectacles. See QUARTZ.

PEBBLE is a term also applied to the various rounded stones of innumerable sizes, shapes, colours, and qualities, found on the sea shore.

PEDILUVIUM, a bath for the feet.

PECTORALS, those medicines which relieve disorders of the chest.

PEDOMETER, or PODOMETER, a mechanical instrument in the form of a watch, consisting of various wheels, with teeth catching in one another, all disposed in the same plane; which, by means of a chain or string, fastened to a man's foot, or to the wheel of a chariot, advance a notch each step or each revolution of the wheel, so that the number being marked on the edge of the wheel, the paces may be numbered, so as to measure exactly the distance from one place to another. Some pedometers mark the time like a watch, and are in every respect like a watch, and are accordingly worn in the pocket. Spencer and Perkins's pedometer is an ingenious one; but there are many others made by different persons.

PEDUNCLE, a term in Botany, implying the fulcre of the fructification, or a partial stem, supporting that only. With respect to its place, a peduncle may be *radical*, or proceeding immediately from the root, as in the primrose; *cauline*, or proceeding from the stem; *ramous*, or proceeding from the branch; *petiolary*, or proceeding from the petiole; *axillary*, or proceeding from the angle made by the leaf and stem, or the branch and stem, &c. &c.

Peewit. See LAPWING.

Peers. See PARLIAMENT.

PEGASUS, a genus of fishes comprehending three species: the *draconis*, or Dragon pegasus, with a conic snout, body blueish, inhabiting India; from three to four inches long;—the *volans*, with an ensiform snout, also an inhabitant of India; three inches long; and the *natans*, size of the *draconis*.

PELAGRA, a disease not commonly described, but said to be very prevalent in some districts of Italy. It consists in a shining red spot, which suddenly arises on the back of the hand, in the months of March or April, at the season which invites the farmers to cultivate their fields; this spot resembles the common erysipelas, but without much itching, pain, or inconvenience; all ages, and both sexes, are liable to it; it sometimes affects both hands; not uncommonly the chin; sometimes the neck, and rarely the face; it is also occasionally seen on the breasts of the female, when they are not covered with clothes. Subsequently, numerous small tubercles of different colours arise on the spot; the skin becomes dry and cracks, and the scarf skin assumes a fibrous appearance; it at length falls off in branny scales, but the shining redness still continues, and sometimes remains throughout the following winter; in September, however, the disease disappears; but in the following spring, it often appears again, accompanied with severer symptoms; and if the disease continues to return for several periods, the patient ultimately becomes melancholy and maniac. No fever is present throughout the disease. The disease is not infectious, nor has the cause been clearly ascertained, although it is supposed to originate from the heat of the sun's rays. It is, most probably, a species of leprosy, requiring the same mode of treatment as that disease. See LEPROSY.

PELICAN, or *Pelecanus*, a genus of birds, comprehending thirty-one species, scattered over the globe; three or four common to our country. They have a straight bill, hooked at the point, and furnished with a nail; nostrils, an obliterated slit; face nakedish; legs equally balancing the body; all the four toes palmate. These birds are extremely expert at catching fishes with their long bills, and are often tamed for that purpose; they are gregarious and voracious. The following are the chief species:

The *Onocrotalus*, or White pelican, is white; the gullet pouched; bill red, from fifteen to sixteen inches long; upper mandible depressed, broad, the lower forked: gular pouch flaccid, membranaceous, capable of great distension; head naked at the sides, covered with a flesh-coloured skin. This bird is by far the largest of this genus, and is even supposed to exceed in size the swan and albatross. But, notwithstanding its size, it supports itself easily in the air, and darts with great rapidity on its prey; the wings being, when extended, from ten to twelve feet. It is universally spread over all the warm latitudes, of both the old and new continents. The pouch will contain ten quarts of water; it answers the purpose of a crop, and is used by this bird to contain food for itself and its young.

The pelican is a torpid and indolent, although exceedingly voracious bird; it will, it is said, swallow at a meal, as much as will satisfy six men. The female drops her eggs on the bare ground, to the number of five or six. The young, when excluded, are fed with the fishes, which have been for some time macerated in her pouch; they are easily tamed: and whatever food is given them they always first commit to the pouch, and afterwards swallow at their leisure. They are useless and disagreeable domestics; and their flesh unsavoury. Great numbers are, however, killed for their pouches, which are converted by the natives of America, into purses, &c. When carefully prepared, the membrane is as soft as silk, and sometimes, is embroidered by the Spanish ladies, for work-bags. It is used by the sailors in Egypt, whilst attached to the two under chaps, for holding or baling water.

The *Carbo*, or Cormorant, called in some parts of England, sea crow, is black; the neck long; size, nearly that of a goose; found in almost every part of the ocean; flesh eaten by navigators; it abounds on the sea coasts of of these kingdoms; but chiefly the north. This bird was formerly domesticated in this country, and trained to fish for its owner; it is still used in China for this purpose.

The *Graculus*, or Shag, sometimes erroneously called crane, is black above, beneath brown; two feet and a half long; inhabits Europe and Iceland: two other varieties, its general manners like the cormorant.

The *Sula*, or Booby, has a whitish body; inhabits South America, and the neighbouring islands. These birds are so extremely indolent, that they allow themselves to be taken on the rigging of ships, or knocked down with sticks, till a whole flock be massacred, to the very last bird. With the same senseless imbecility, they abandon themselves to the depredations of the man of war bird. (See the next species.) These birds no sooner perceive them in the air, than they pounce upon them, not to destroy them, but to make them disgorge the fish they have swallowed, which is snatched up by the voracious plunderer before it reaches the water. The booby is about two feet and a half long; its bill five inches; its tail upwards of ten.

The *Aquilus*, or Frigate pelican, has a forked tail; body black; bill red; male, pouch deep red; female, belly white; inhabits within the tropics; three feet long; extent of the wings, fourteen feet; builds in rocks and trees; eggs one or two, flesh-colour, spotted with red. The frigate pelican is one of the most formidable tyrants of the ocean. When in flocks, their audacity has sometimes prompted these man of war birds to brave man himself. Upon the island of Ascension, a cloud of them attacked a crew of French sailors; and till some of them were struck down, endeavoured to snatch the meat from their hands. From the length of their wings, when upon the ground, they cannot easily take flight, they therefore, although having palmate feet, perch commonly on trees, or other eminences.

The *Bassanus*, or Gannet, has a white body; bill and primary quill feathers black; face blue; two other varieties. One inhabits Cayenne; the other Europe and America. The gannets are birds of passage, and make their appearance in the British isles in the summer season, ariving in March, and quitting in

August or September; their chief food is herrings; they are found in vast numbers on the rocky recesses of Scotland. The female only lays one egg, but if that be carried away, she will lay twice, or even thrice. The young are fat, and are a tolerable food. In St. Kilda, they contribute with their eggs, a considerable part of the food of the inhabitants, and are obtained by a most dangerous expedient, that of a person being suspended by a rope from precipitous rocks sometimes two hundred fathoms from the ground. The eggs and fowls thus procured, are preserved in small pyramidal stone buildings, covered with ashes to defend them from moisture.

PELLITORY, or *Parietaria*, a genus of plants, consisting of ten species, chiefly natives of the Cape, India, and the south of Europe; one, the *officinalis*, or Pellitory of the wall, a perennial with reddish stalks, common to the walls of our own country, and formerly in the materia medica, but of very trifling virtues. The only cultivated species is the *arboreum*, or Tree pellitory, a soft, upright shrub, about five or six feet high, with red shoots, villose with hoary hairs; flowers in the male, yellow, female red; a native of the Canaries.

PELLITORY of SPAIN, or *anthemis pyrethrum*, a perennial plant, a native of the Levant, Barbary, and the south of Europe. It is sometimes cultivated in Britain, flowering from June to July. The dried root is brought to this country from the Levant, and the coast of Barbary. When chewed, it excites a glowing heat on the tongue and lips. It is chiefly used, being chewed, as a sialagogue, by which inflammations and congestions of the neighbouring parts are relieved; hence it has been found useful in some headachs, apoplexy, chronic ophthalmia, rheumatic affections of the face, and tooth-ache; and, by its direct stimulus, in paralysis of the tongue, and muscles of the throat. It has sometimes, though rarely, been given internally, from a few grains to a scruple, as a hot stimulant, in paralytic, and rheumatic disorders.

PELVIS, in anatomy, the cavity at the bottom of the abdomen. It is composed of four bones, the two ossa innominata, the sacrum, and the os coccygis. It contains the pudenda, the bladder, and the rectum.

PEMPHIGUS, a cutaneous disease, distinguished by a number of small distinct red spots, first appearing, as it is said, on the inside of the thighs; and gradually spreading over the whole body; they at first appear a little elevated above the surface of the skin, and resemble the early eruption of small-pox. The whole surface of the skin becomes at length covered, more or less, with vesicles containing a watery fluid, of the size of an ordinary walnut, many of them larger; they burst, and form a whitish scab or crust. This disease is of rare occurrence; we have ourselves seen it in a person advanced in life, and it is, in our opinion, caused by poor living, or the consequence of some eruptive and debilitating disease. It is usually attended with various symptoms of debility, quick pulse, and fever; of course the best medical advice should be had; but nourishing diet, beef-tea, the bark, wine, and acidulated drink, consisting of water gruel and lemon juice are required. The sores may be dressed with calamine cerate. It does not appear to be contagious; but it is, nevertheless, a disagreeable, tedious, troublesome, and sometimes fatal disorder.

PENÆA, a genus of plants, consisting of nine species, two natives of Ethiopia, the rest of the Cape. From one of the Ethiopian species, the gum, called in the shops *Sarcocolla*, is supposed to be obtained.

Pencils. See BLACK LEAD, and CRAYON.

PENELOPE, a genus of birds, consisting of four species, as follow: the *cristata*, or Guan, with an erect crest; bill black; body black-green; back brown; neck, breast, and belly, spotted with white; two feet and a half long; inhabits Guiana; often tamed; makes a noise not unlike the sound *jacu;* flesh good. The *cumanensis,* or Yacou, is blackish, crest and first quill feathers white; body beneath speckled with white; tail long; legs red; size of a hen turkey; erects its crest, and spreads its tail; builds on the ground, or in low trees; a native of Guiana and Cayenne; at the latter place it is tamed and mixes with other poultry. The *pipile,* or Piping curassow, has the back brown, spotted with black, the belly black; wing coverts, and quill-feathers white; legs red; inhabits as the last. The *maril,* or marail, is greenish black; inhabits in flocks the woods of Guiana.

PENGUIN, or *Aptenodytes,* a genus of birds, comprehending eleven species, distinguished by a straight bill, wings fin-shaped, without quill feathers; feet fettered, four-toed.

This genus much resembles the *auk,* (see below,) in colour, food, stupidity, eggs, nest, position behind the equilibrium, and consequent erect posture; they are totally unfit for flight, but swim dextrously. The wings are covered with a strong broad membrane; tail short wedged, and feathers very rigid. They are chiefly inhabitants of Falkland islands, and the shores of the southern ocean.

Although the AUK is usually described as a distinct genus by naturalists, we think it may be convenient to arrange it also under this head. Its generic character is as follows: bill toothless, short; lower mandible gibbous, near the base; nostrils linear; legs mostly three-toed. Its colour is nearly uniform, above black, beneath white; body shaped like a duck's. It is chiefly an inhabitant of the Arctic seas; very stupid; builds in rabbit's holes, and fissures of rocks; lays one egg. There are eleven species of this genus. The following are most deserving notice:

The *arctica,* or Puffin; two varieties; inhabits the northern seas of Europe, Asia, and America, in vast flocks; body black; cheeks, breast, and belly, white; bill red; legs red. Feeds on fish and sea-weed; twelve inches long; flesh rank, except when very young; eggs excellent.

The *Impennis,* Penguin, or Great auk, inhabits Europe and America; three feet long; timid; cannot fly; feeds on fishes; eggs six inches long, white, with purplish lines and spots; bill black; wings short, as though mere rudiments of wings; legs black.

The *Cirrata,* or Tufted auk, is nineteen inches long, and inhabits Kamschatka, and the adjacent islands; lives on the water for days together, but never ventures far from land.

PENNY, a copper coin of variable weight, but about one ounce avoirdupoise, and of the value of four farthings.

Penny Royal. See MINT.

PENNY-WEIGHT, a troy weight, containing twenty-four grains.

Penny wort. See WHITE ROT.

PENTAGRAPH, an instrument, whereby designs of any kind may be copied in what proportion you please, without being skilled in drawing.

Peony. See PIONY.

PEPPER, or *Piper,* a genus, comprising fifty-one species, chiefly West Indian or American plants; some natives of the East Indies, a few of the Cape. The following are the chief:

The *Nigrum,* a climbing plant, growing abundantly in various parts of the East Indies. The stem is round, smooth, jointed, woody, and from eight to twelve feet long; the leaves are petiolate at the joints of the branches, ovate, entire, pointed, and of a dark green colour; the flowers are white, without any regular calyx or corolla; the fruit is a globular berry, of a blackish colour: the black pepper of the shops. In Sumatra, the pepper vines are propagated by cuttings or suckers. In growing they are supported by props; the plants are three years old before they bear fruit; they yield two crops yearly, the first in December, the second in July. The berries are four or five months in coming to maturity; are gathered as soon as they are ripe, and then spread upon mats to dry, and trodden to separate the fruit from the stalk.

White pepper, is the ripe and perfect

berries, freed from their outer coat by means of a preparation of lime and mustard oil, applied before it is dried.

The use of black pepper as a condiment is well known. As a medicine it is stimulant and carminative; and although it is useful to those who are dyspeptic, yet, even in small quantities, it is injurious to inflammatory habits, and to those subject to piles. It is sometimes serviceable in checking nausea and vomiting, and removing hiccough. It is also used as a stimulant in retrocedent gout, and in palsy. The watery infusion is a useful gargle in relaxation of the uvula. The dose, when taken internally, may be from ten grains to one scruple.

The ground black pepper of the shops is, in general, most shamefully adulterated with powdered rape-seed-cake, commonly called P. D. The only certain method for families to have genuine pepper, is to purchase the berries, and have them ground under their own inspection.

The *Longum*, or Long pepper, has a shrubby, climbing stem, and entire, alternate, heart-shaped leaves. It is a native of India; the fruit is the long pepper of the shops, of which there are two kinds, the *long*, and the *short long;* the last is esteemed inferior; both are of similar virtues to black pepper.

The *Betle*, or Betel, with striate, angular stems, and ovate, rather oblong, pointed leaves; a native of India, and cultivated by props like the vine; the areca is a common prop; and the leaves, inclosing a few bits of areca, which correct their bitterness, are universally chewed by the Asiatics, and form a common present from friend to friend.

The *Cubeba*, having a stem jointed, and flexuous; leaves unequal at the base. A native of Java and Guinea. The berries the CUBEBS of the shops. They are a warm spice, but, medicinally considered, are inferior to pepper.

The *Siriboa*, with heart-shaped leaves, is a native of India, and yields a pepper similar to the *nigrum*.

The *Methysticum*, has a forked, spotted stem, with oblong, heart-shaped leaves. The root bruised or chewed, and mixed with the saliva, forms the intoxicating juice called *ava*, which is so agreeable to the natives of the South Sea Islands, to which the plant is indigenous.

About eight species of this genus are cultivated in our own conservatories, by seeds procured fresh from the countries to which the plants respectively belong.

Pepper, Cayenne. See CAPSICUM.

———, *Guinea.* See CAPSICUM.

———, *Jamaica.* See ALLSPICE.

PEPPERMINT, or *Mentha piperita*, is an indigenous, perennial plant, growing in moist places, and flowering in August and September. It is usually cultivated for medicinal use, particularly about Mitcham, in Surrey, whence the London market is chiefly supplied with it. There are three varieties of peppermint, the first of which is the officinal plant. The root is creeping, stem quadrangular and branching, about two feet high, purplish, and rather hairy; the leaves are dark green, opposite, petiolate, ovate, rather pointed, and serrated; the flowers are in terminal spikes; the corolla is purple. The cultivators of it say, that to keep up its quality, the root must be transplanted every three years, or it will degenerate into the flavour of spear-mint; and that the plant should not be cut in wet weather.

The odour of both the recent and dried plant is penetrating and grateful; in some degree resembling camphor; and the taste pungent, warm, glowing, and bitterish, followed by a sensation of coldness in the mouth. These qualities depend on an essential oil and camphor. The oil, which is easily obtained by distillation of the herb in water, is of a yellowish colour, and holds the camphor in solution. Peppermint is tonic, antispasmodic, and carminative. It is chiefly used to allay nausea and griping, to relieve flatulent colic, and in hysteria; or as a vehicle to cover nauseous medicines. It may be given in watery infusion; but the distilled water, the essential oil, and the essence, are generally preferred.

Peppermint water is made thus: take of peppermint one pound and a half; pour over it as much water as will prevent burning during the distillation. Distil off a gallon. This water is given almost at pleasure; its dose may be, however, from two to six fluidounces.

Essence of peppermint is made thus: take of oil of peppermint four ounces; of rectified spirit of wine one pint: mix them. This is a useful form for making peppermint water without the trouble of distillation: two fluidrachms dropped upon half an ounce of lump sugar, rubbed a little together, and then dissolved in a pint of water, will make a peppermint water superior to most which is to be obtained in the shops. Essence of peppermint is also useful to be taken alone, being dropped upon sugar, for flatulencies and colic. The dose is from five to ten drops. The essence of peppermint usually sold in the shops as a quack medicine, does not contain more than one half of the proportion of the oil here ordered.

The dose of the *oil* of peppermint is from one drop to four, given on a lump of sugar, or rubbed with mucilage.

PEPPERWORT, or *Lepidium*, a genus consisting of twenty-eight species, chiefly European plants: a few natives of Asia and America; and three common to our own wastes and moist shades; of these last, the *latifolium*, with ovate-lanceolate leaves, is the most frequent; the whole plant has a hot taste like pepper, and is sometimes used with other esculents, instead of that spice; it was formerly called *poor man's pepper.*

PERAMBULATOR, an instrument for measuring distances. It consists of a wheel which measures a pole, or 16½ feet in two revolutions, and is either driven forward by two handles by a person walking, or is drawn by a coach-wheel, &c. to which it is attached by a pole. It contains various movements, by wheels or clock-work, with indices on its face, which is like that of a clock, to point out the distances passed over, in miles, furlongs, poles, yards, &c. It is of great use in measuring roads, and great distances on level ground.

PERCEPTION, that power or faculty, by which, through the medium of the senses, we have the cognizance of objects distinct and apart from ourselves. It appears to be the second power or operation of the mind, sensation being the first.

PERCH, or *Perca*, a genus of fishes, comprehending sixty species, scattered through the seas of the globe, four or five of which are found in the waters of our own country. The distinguishing characters of this genus are, jaws unequal, teeth sharp, incurved; gill-covers scaly, gill-membrane seven-rayed; scales hard, rough; fin spinous; vent nearer the head than the tail. They are thus divided: dorsal fins two, distinct,—dorsal fin single; tail undivided,—dorsal fin single; tail forked. The following are the chief:

The *fluvitalis*, Common, or river perch, having the second dorsal fin with sixteen rays.

The *labrax*, or Basse, having the second dorsal fin with fourteen rays; back dusky, tinged with blue; belly white.

Both these are British fishes, and possess a peculiar tenacity of life. The former grows to two feet long; swims with great swiftness at a certain height in the water; easily takes a bait; feeds on aquatic insects, and smaller fishes; spawns, in May and June, ; very prolific; it has no real air bladder; from its integuments may be obtained a kind of glue. It seldom exceeds five or six pounds in weight, generally much lighter; flesh good. The basse sometimes weighs fifteen pounds; shape of a salmon; flesh good.

The *Scandens*, or Climbing perch, is about a palm long; inhabits the rivers of Tranquebar; has a very singular habit of crawling up trees.

The *Cernua*, or Ruffe, inhabits the clear streams of our own country, and Europe generally; from six to eight inches long; flesh good.

The *Nigra*, or Black fish, is fifteen inches long; inhabits Cornwall.

The *Formosa* or Squirrel fish, inhabits Carolina.

PERENNIAL, in botany, a term applied to plants which survive for a series of years; most trees and shrubs are of course perennials; but there are many other plants whose stalks die every year, yet the roots survive; such are also called perennials.

PERIANTH, in botany, the calyx of the flower when contiguous to the other parts of fructification. The perianth is often, but improperly, called the calyx: this latter term has, however, a more extensive signification. See CALYX.

PERICARDIUM, or **HEART-PURSE,** in anatomy, the membranous bag that surrounds the heart. Its uses are to keep the heart in its place, without interrupting its office, to keep it from having any friction with the lungs, and to contain a liquor to lubricate the surface of the heart, and abate its friction against the pericardium.

PERICARP, in botany, the seed vessel or seed-case; capsules, pods, drupes, berries, strobiles, &c. are pericarps.

PERICRANIUM, the membrane that is closely connected, and covering the bones of the skull; it is called periosteum, on the other bones of the body.

PERINÆUM, in anatomy, the space between the anus and the pudenda.

PERIODICAL PUBLICATIONS, those books, or parts of books, newspapers, journals, magazines, &c. which are published at regular or different intervals.

One of the most distinguishing characteristics of the literature of the present period is, the extensive circulation which perodical publications obtain. We have spoken of newspapers under that article, to which, therefore, we refer. We shall here enumerate the principal perodical works which more or less engage the attention of the British public; and whether we consider them as mere vehicles of amusement, or in their more useful and valuable character, that of imparting scientific, political, and moral information to a great portion of the people, they have obtained, and deservedly, a high rank, by the effects which they have produced upon the human mind, and which bulky and elaborate volumes, however well written, from their limited circulation, cannot achieve.

The principal monthly publications of Great Britain are the following.

The Monthly Magazine; the Gentleman's Magazine; the European Magazine; the New Monthly Magazine; Baldwin's London Magazine; the Edinburgh Magazine; Blackwood's Edinburgh Magazine; the Medical Journal; the Medical Repository; the Philosophical Journal; Thomson's Annals of Philosophy; the Repertory of Arts; the Christian Observer; the Evangelical Magazine; the Ladies Magazine; La Belle Assemblée; besides others on botany, trade, agriculture, &c. &c. which we cannot enumerate.

The chief monthly reviews are, the Monthly Review; the Edinburgh Monthly Review; the British Critic; the Eclectic Review; the Antijacobin Review.

The London Journal of Arts and Sciences is published every two months.

The principal quarterly publications are, the Quarterly Review; the Edinburgh Review; the British Review; the Pamphleteer; the Retrospective Review; the Journal of Science, Literature, and the Arts; the Annals of Art; the Edinburgh Philosophical Journal; the Classical Journal, &c.

The merit and respectability of these works are not less various than their sale; on neither of which is it our design to dilate. Many of them, it is to be lamented, are too much devoted to party purposes. The Quarterly Review is, perhaps, at the head of all the literary works in point of sale, twelve thousand copies being sold, we are informed, every quarter. Of the monthly publications, the sale of the Evangelical Magazine is supposed to be the most extensive; it is said, 20,000 copies monthly. But the sale of the monthly *literary* publications is much below this number; probably the most popular does not exceed 4000 monthly; still the number circulated upon the whole is great; and through the means of institutions, reading societies, &c. &c. afford a mass of information which, we apprehend, is unequalled in the world.

PERIOSTEUM, the membrane which invests the external surface of all the bones, except the crown of the teeth. Its use appears to be to distribute the vessels on the external surfaces of the bones, and to serve as a surface for the muscles to slide upon easily.

Peripneumony. See LUNGS.

————, BASTARD. See BASTARD PERIPNEUMONY.

PERISTALTIC MOTION, that motion of the intestines, by which they contract and propel their contents.

PERITONÆUM, in anatomy, a strong simple membrane by which all the viscera of the abdomen are surrounded, and which also lines the whole cavity of the abdomen. It is outwardly every where surrounded by a cellular substance, which, towards the kidneys, is very loose and fat.

PERIWINKLE, or *Vinca*, a genus of plants comprehending five species; three natives of the West Indies, or America; two common to our own hedges and woods. The three following are cultivated: the *rosea*, or Madagascar periwinkle; the *major*, or Great periwinkle; and the *minor*, or Small periwinkle: the last is indigenous, and has evergreen glossy leaves.

PERIWINKLE, WREATH, or *turbo*, a genus of univalve, testaceous worms, consisting of one hundred and fifty species, scattered over the globe, mostly marine; some inhabiting stagnant waters. The *littoreus*, or Common periwinkle, inhabits our own shores; the fish is often eaten, and the shell too well known to need description. The *crenellus*, has a shell with a flattish spreading navel. The *scalaris*, or Wentletrap, has a conic shell, two inches long; highly curious, and very valuable; inhabits Barbary and Coromandel. The *clathrus*, or False wentle-trap, inhabits the European and Indian seas; from one to two inches long.

PERRY, a fermented liquor made from the juice of pears, in the same manner as cider is made from apples. This beverage is preferred to cider by some persons, but as it contains generally less alcohol and acid than that liquor, it is by no means so suitable as a stimulant, either for the labourer or even the dyspeptic.

Persecution. See TOLERATION.

Persian lily. See FRITILLARY.

PERSICARIA, ARSMART, or *Polygonum orientale*, an annual plant, a native of India, but known in our gardens as an ornamental flower, blossoming from July to October. It is easily raised from seeds; those plants which arise from the seeds which are scattered in the autumn are often finer than those which are obtained from seeds specifically sown in the spring.

Persimon plum. See PALM.

PERSPIRATION, the vapour that is secreted by the extremities of the cutaneous arteries, from the external surface of the body. It is distinguished into sensible and insensible. The former is seen on the surface of the body, in moisture, or drops, usually called *sweat*; the latter is not seen, but exhales in great quantity, not only from the whole surface of the body, but from the lungs, during the process of respiration.

The evacuation of moisture by perspiration from the surface of the body, as well as the lungs, is perhaps one of the most important processes of the animal economy. By it the excessive heat, accumulated in the body, as well as many noxious particles, are constantly carried off. Hence the necessity of clothing ourselves so that this salutary process may not be obstructed; and hence when it is obstructed, the necessity of employing the means of re-establishing, as soon as possible, the due action of the perspiratory functions.

It may, at first view, be thought that these functions would be best preserved in a healthy state, by keeping the body constantly in a suitable degree of warmth, or relaxation; and with the valetudinarian and sedentary, great attention is necessary, in this respect; but it is well known, where persons take a proper quantity of exercise, even in a cold atmosphere, so as to enable nature, if we may so speak, to overcome the stricture upon the skin, occasioned by the mere access of cold, that, under such circumstances, the perspiration will be powerfully and effectually excreted, and good health be best obtained.

It has been said, that the perspiration is a preternatural discharge; but we can by no means assent to this opinion: for we believe it will be in general found, that the most healthy persons constantly perspire; and that when the perspiration is both plentiful and equable, at the same time that the body continues strong, it is an indication of good health. It is, however, sometimes in excess, and evidently contributes to weaken the body, more, however, most probably, as an effect than as a cause. See CATARRH, and EVAPORATION; under which last article, are some observations, which are very appropriate to this article, but which it is unnecessary to repeat here.

The perspiration of the *feet* is, in some persons, who are in health, very considerable, and sometimes very unpleasant. Such evacuation should be by no means obstructed. The only things which can be done in such cases are, to adopt the most rigid cleanliness, to bathe the feet, occasionally, in lukewarm water, and to exchange the stockings daily.

The *Perspiration of horses, and other quadrupeds*, is also a highly important discharge. In some animals, as the dog, there is no visible perspiration; in such animals it is thrown off by the lungs.

In the human body, perspiration is easily promoted by medicine, but in the horse and other domestic animals, this is not the case. In the horse, sweating can only be excited by such substances as produce violent irritation, or inflammation of the stomach and bowels, or by exercise. Many of the diseases of horses and cattle, are caused by suppressed, or checked perspiration: the various appearances which such diseases assume, depending, most probably, upon the suddenness with which the discharge is stopped, and the state of the animal at the time it takes place. Cattle often suffer from being kept in cold bleak situations, by diseases arising from suppressed perspiration. It is scarcely necessary to add, that in sheltering cattle from the inclemencies and cold of the weather, a great variety of diseases may be prevented; and that fields surrounded by trees and hedges, and sometimes sheds and warm inclosures, are as necessary for the health and well-being of horses and cattle, as houses for the shelter of the human race.

Peruvian Balsam. See BALSAM.

PERUVIAN BARK, or *cinchona*, a term applied to the bark of several species of a genus of trees, called also CINCHONA, consisting, it is said, of twelve species, all natives of the East, West Indies, or South America. The following are the chief:

The *Lancifolia* is a lofty handsome tree, always in leaf, found on the Andes of Peru, growing at heights above the level of the sea, varying from 6250 to 8300 feet. It exudes, wherever it is wounded, a yellow astringent juice. Its flowers are odorous, and of a whitish rose colour. Its bark is the *yellow bark* of the shops.

The *Oblongifolia* grows also in the woods on the Andes, on the banks of mountain streams, in great abundance, flowering in July; it rises to a very considerable height; the leaves are of an oblong oval shape, and sometimes from one to two feet long. The bark is the *Red bark* of the shops.

The *Cordifolia* is found on the mountains of Quito and Santa Fé, growing along their skirts, and on the plains, and flowering in September. The bark is the *Pale bark* of the shops.

The *Caribæa*, or Caribean bark-tree; and the *floribunda*, or St. Lucia bark-tree, with elliptic pointed leaves, a native of the West Indies, and especially of St. Lucia, are arranged by some naturalists under this genus; the bark of the last has been also occasionally used for similar purposes as the Peruvian bark, but it obtains little notice among medical practitioners.

As cinchona bark occasionally varies in its powers, and is often adulterated with other inferior barks, it is of importance to be able to distinguish good bark, and the best from those of an inferior description. The best bark of the first class is of an orange yellow colour; and its goodness decreases as the colour varies from this to a very pale yellow. When of a dark colour, between red and yellow, it is always to be rejected. But perhaps the best criterion of all the different barks is their fracture: when they break short and shining they are usually esteemed good; but when irregularly ragged and woody, they are commonly considered as very indifferent. The yellow bark conforms, however, the least to this rule, some of it breaking ragged and woody, which is still good. But the *red bark*, which was formerly the most in request, as now found in the shops, is so indifferent that it is not often used, although, when in quills, and conforming in its fracture to the rule here mentioned, it is, we believe, as good as any of the other kinds. All these barks have a bitter astringent taste; the bitter of the yellow bark is the most intense and disagreeable.

The medicinal powers of both yellow, red, and pale bark are of a similar nature; the yellow, which was last introduced into medical practice, is now very generally preferred. Their powers are supposed to consist chiefly in a peculiar matter, called by modern chemists *cinchonin;* but, however, as they contain also resin, extractive matter, gluten, a volatile oil, and tannin, and some other ingredients, it is still doubtful on what their virtues depend; and although it has been usually supposed that the bark which contains most resinous matter is the best, yet, as the bark given in *substance* is commonly most effectual, more is perhaps attributable to the woody and fibrous part than has been generally believed. In agues in particular, the bark is not so effectual given in any other way as it is in powder. Cinchona bark is, however, undoubtedly, a powerful tonic, possessing also antispasmodic and antiseptic powers; and superior to all other remedies in counteracting some species of febrile action; and for restoring strength and vigour to diseased and weak constitutions. In intermittent fevers it may be considered almost a specific, although some cases occur in which it is not effectual. The common routine with medical practitioners is, before giving it, to clear the stomach and bowels by an emetic and cathartic; but we consider such practice too much like quackery: for in many instances neither emetics, nor even cathartics, are at all necessary; they sometimes, however, are so: but their exhibition must be determined by the presence of certain symptoms; such as nausea, costiveness, &c.

In remittent and typhous fevers, the barks have been also found very useful; but in the last they are not so advantageously given till symptoms of unequivocal debility appear, or until the morbid heat is abated. The bark has also been advantageously given in gout, and in pulmonary consumption, when considerable debility is present; or the disease assumes an intermittent form. In short, in the recovery after almost every disease, in which the strength and powers of nature have been considerably reduced, the bark is not only a useful but an efficient remedy.

As a local remedy, it is sometimes used, in the form of gargle, in the malignant sore-throat, and as a wash to gangrenous sores; in these cases it is said that the red bark is to be preferred.

It is best given in fine powder. The dose is from five grains to two drachms or more. In intermittents, a dose of a drachm, or more, should be given at once; but in other diseases it may be given in doses of five, ten, or fifteen grains, repeated every two, three, or four hours, and gradually increased until one, or two ounces in some cases, are taken in twenty-four hours. When the stomach will not bear the bark in substance, some of the following preparations, according to circumstances, should be given.

Infusion of Cinchona Bark. Take of yellow Peruvian bark, bruised, half an ounce; boiling water half a pint. Macerate for two hours in a lightly-covered vessel and strain. The dose is from one fluidounce to three fluidounces, three or four times a day, in dyspepsia, and convalescence from various diseases.

Decoction of Cinchona Bark. Take of yellow Peruvian bark, bruised, one ounce; of water a pint. Boil for ten minutes in a lightly-covered vessel, and strain the liquor while it is hot. The dose is the same, and given on similar occasions as the infusion.

Both the infusion and decoction of bark ferment spontaneously, in a few days, during summer, and therefore will not keep. They also afford precipitates with the strong acids, the alkaline carbonates, lime-water, solutions of sulphate of iron, with sub-carbonate of potash, and emetic tartar; with decoctions of chamomile flowers, columba, horse radish, orange peel, fox-glove, catechu, senna, rhubarb, &c., and should, therefore, not be mixed with them.

Compound Tincture of Cinchona Bark, commonly called *Huxham's Tincture of Bark.* Take of yellow Peruvian bark, powdered, two ounces; of dried orange peel one ounce and a half; of Virginian snake-root, bruised, three drachms; of saffron one drachm; of cochineal, in powder, two scruples; of proof spirit twenty fluid ounces. Macerate for fourteen days, and filter. The dose is from one fluidrachm to three, or more.

Several *Extracts of bark* are ordered by the colleges, but we have not room to describe the method of making them; that called the *Resinous extract of cinchona bark* is esteemed the best; and is, perhaps, next in efficacy to the powder. Its dose is from ten grains to thirty, formed into pills.

We have prescribed yellow bark in all the above processes; but where yellow bark is not to be obtained, the pale, or red, may be used, and perhaps with equal efficacy.

PERUVIAN MASTICH, or *Schinus*, a genus of shrubs consisting of two species: the *molle*, or Lentisk-tree, a native of Peru; and the *areira*, or Brazilian mastich-tree, a native of Brazil; they are both shrubby ever-greens, and propagated by seeds obtained from their native soil, sown in pots plunged in a moderate hot-bed; and are both hot-house, or green-house plants.

PESSARY, an instrument worn sometimes in the vagina, to support the uterus.

Pestilence. See PLAGUE.

PETAL, in botany, a flower leaf. In flowers of several petals the corol is the whole, and the petals are the parts.

PETECHIÆ, red or purple spots that mostly appear in pestilential diseases.

PETIOLE, in botany, a leaf-stalk, or foot-stalk.

PETREL, or *Procellaria*, a genus of birds, comprehending twenty-four species, chiefly natives of America and Australasia. They live chiefly at sea, and have the faculty of spouting from their bills, to a considerable distance, a large quantity of pure oil; they feed on the fat of dead whales and other fishes. The following are the chief:

The *Pelagica*, or stormy procellaria, is black, with the rump white; another variety having the wing coverts and rump spotted with green; inhabits most seas; six inches long; except at breeding time, seldom seen near the shore; braves the utmost fury of the storm, skimming with great velocity among the waves; if seen hovering round the sterns of vessels, a presage of foul weather.—The *vittata* or Broad-billed petrel, is bluish ash, beneath white; inhabits the Antarctic seas; twelve inches long; flies by night in numerous flocks.—The *urinatrix* is blackish brown, beneath white; dives dextrously; inhabits round New Zealand, in numerous flocks; eight and a half inches long.—The *glacialis*, or Fulmar petrel, is whitish, back hoary; another variety with blackish wings; size of a gull; found in New Zealand; affords food, feathers for beds, oil for lamps, and a medicine in almost every disease incident to the New Zealanders. The *puffinus*, or Shearwater petrel, is black above, white beneath; another variety, above cinereous, beneath white; fifteen inches long; inhabits the Southern and Antarctic seas; found also in the Hebrides; the young are taken in August, salted, and barreled, and, when boiled, eaten with potatoes. The young of these, and some other of the species, are fed by the oil discharged from their stomachs. Migrates from the Scottish isles in the autumn.

Petuntz. See FELDSPAR and PORCELAIN.

Pewit. See LAPWING.

PEWTER, a factitious metal, and very uncertain in its composition. It is of a bluish white colour, soft, and susceptible of considerable polish. It is generally kept of different qualities. That which is called plate metal, is said to be formed of tin and regulus of antimony, in the proportions of 112 pounds of the former to six or seven pounds of the latter. The next inferior mixture, called trifling metal, is lowered by alloying it with lead; of this metal ale-house pots are made. Lead may be mixed with tin, in any proportion, without destroying its malleability. Hence lead and tin, with or without other smaller additions, form the pewter of ordinary use: and as lead is the cheapest of the two metals, there is reason to believe that it enters largely into the composition of all pewter in ordinary use. Notwithstanding lead is a poison when dissolved in any of the acids, or even merely oxydized, it is found that acids do not, under ordinary circumstances, act upon the lead contained in pewter vessels, especially when the lead is not in greater quantity than 18 per cent.; but, nevertheless, as it is very probable that, in most pewter, lead is mixed with tin in a far greater proportion, it is said to the amount of 75 per cent., the use of pewter vessels for food should be avoided.

A patent has been lately obtained by W. CARTER, Esq., for making measures of capacity of cast iron, and afterwards coating them, both inside and out with tin; by which the use of pewter pots for porter, &c., may be, and we should hope will be, superseded.

Phaeton. See TROPIC BIRD.

Phalanger. See OPOSSUM.

Phalarope. See LAPWING.

PHARMACOPŒIA, a dispensatory, or book containing an account of the articles of the materia medica, directions for preparing medicines, &c.

PHARMACY, the art of preparing medicines.

The domestic prescriber will not, perhaps, be very willing to enter minutely into this art; but there are, however, several particulars which it is very desirable that he should know. We have, under the article MATERIA MEDICA, given some rules relative to the compositions and doses of medicines, which we need not here repeat, but to which the reader will refer. For the most common and useful purposes, the chief implements which will be necessary are, a small tinned iron saucepan or two, of different sizes, with covers, for the purpose of making decoctions, &c.; another without a cover for making ointments, and which should be kept for such purpose only; a mortar and pestle, made of Wedgewood's ware, not marble, about six inches in diameter; a cast iron mortar and pestle to hold about a quart; a smooth marble slab, about eight inches square, and one inch thick; a pair of scales and weights for weighing pounds and ounces; another for drachms, scruples, and grains; a graduated glass measure for ounces and drachms; another for minims or drops; a spatula for spreading plasters, and a bolus knife for a variety of other purposes. One or two sieves will also be necessary, to separate the powder of substances from its grosser parts; a quart and pint wine measure, and a glass, as well as a common tin funnel, and filtering paper, will be indispensable. To these may be added a small still to hold about three gallons; some crucibles; a hydro-pneumatic apparatus; (see GAS,) and one or more retorts and other glass vessels, for the purpose of distilling various waters, spirits, obtaining gases, &c. &c. The retorts may either be heated by means of a spirit lamp or a sand heat. If the whole of these apparatus should be obtained, it is by far the most desirable that they should be kept in a room specifically appropriated for their reception. See **ELABORATORY.**

Each of the kingdoms of nature furnishes articles employed in medicine, either in their natural state, or when prepared or compounded by the art of pharmacy. In collecting these, care should be taken that they are sound and perfect substances; and all injured or decayed parts, as well as foreign matter, must be separated from them. As a general rule, they must be defended from the effects of moisture, great heat, cold, and freely exposed to the air; yet when their virtues depend on volatile principles, instead of being freely exposed to air, they must be confined as much as possible from its contact. The *vegetable kingdom affords the most numerous articles*; and these should rather be obtained from countries in which they grow naturally, than from countries in which they merely grow by transplantation; and those which grow wild in dry soils, and in situations exposed to the air and sun, are, for the most part, to be preferred to plants that are cultivated, or that grow in moist, low, shady, and confined situations. Annual roots should be collected before they shoot forth their stalks or flowers; biennial roots in the harvest of the first year, or the spring time of the second; and perennial roots either in the spring before the sap flows, or in harvest after it ceases to flow. Roots which consist chiefly of fibres, and having little sap, after being washed, may be dried at once; if juicy and not aromatic, in a heat somewhat below 100° of Fahrenheit; and if aromatic, by simply exposing them to a current of cold, dry air, and frequently turning them. If very large, they should be cut into slices or strung upon threads. Such as lose their virtues by drying should be buried in dry sand.

Relative to the preservation of stalks, leaves, and flowers, &c. it is difficult to lay down any general rules. Aromatics should be collected after the flower-buds are formed; non-aromatics, if annuals, when in flower or about to flower, biennials before they shoot, and perennials before they flower. They should be gathered in dry weather, after the morning dew is off, or before it falls in the evening; generally speaking, they should be tied in bundles and hung up in a shady, warm, and airy place, or spread upon a warm floor and frequently turned.

Flowers should be collected in clear, dry weather, before noon; they are to be dried nearly as leaves, but more quickly and with more attention; as they should not be exposed to the sun, they are best dried by a slight degree of artificial warmth. Seeds and fruits, unless when otherwise directed, are to be gathered when ripe, but before they fall spontaneously.

Sprouts are to be collected before the buds are open, and stalks gathered in the autumn.

Barks are to be collected when the most active parts of the vegetables are concentrated in them; spring is preferred for the resinous barks, and Autumn for those which are more gummy. Young trees afford in general the best bark for medicinal purposes.

Seeds, odorous plants, and those containing volatile principles, must be collected fresh every year; others, whose properties are more permanent, will keep for several years. Vegetables collected in a moist season, are more apt to decay than those collected in a dry one.

For the common purposes of pharmacy, a kitchen fire will answer, but it may be desirable, if a room for pharmaceutical purposes be set apart, to have a small circular furnace, so contrived that it may be open at the top, and a saucepan or other vessel made to fit on it, so that a complete command of the fire may be obtained. See **DISTILLATION, FURNACE,** and **LABORATORY.**

In distillation, as well in glass vessels as in metallic ones, great care and circumspection are necessary in the administration of the heat; and in the use of glass vessels, unless great precaution be adopted, much mischief may be produced; in the sand heat, as well as by the spirit or other lamp, the heat should be gradually applied: for if an intense heat be suddenly administered, the vessel may not only be broken, but its contents, with perhaps an explosion, be the consequence.

In the making of tinctures, a process more immediately likely to be adopted by the domestic prescriber, care should be taken that the articles are well bruised, or in some cases powdered before they are immersed in the spirit; and, during their maceration, they should be well mixed or shaken in the fluid at least once a day. They should of course be kept well stopped; although during the time of shaking, it may be advisable to loosen the cork a little.

In the making of ointments also, some precaution is necessary. Books commonly direct most of the ingredients to be melted together; this, however, is a very improper direction. That ingredient which melts with most difficulty should be melted alone first, then the next most difficult should be added, and so on, and lastly the oil. Thus, as mentioned under the article BASILICON, the rosin is first to be melted, then the wax, then the burgundy pitch, then the horse turpentine, and lastly the oil is to be added; so also in tar ointment, the mutton suet should first be melted, and when the tar is added, no more heat should be used than is just sufficient to melt the tar.

In the making of syrups, some attention is also necessary, for if they be made too thin they ferment, and if too thick they candy. The rule is that, unless otherwise directed, they should be boiled till, when cold, on a small quantity being poured out from a small cup or spoon, and the stream being suddenly stopped, a globular drop is suspended, and returns with a sort of adhesive elasticity to the edge of the cup containing it. Syrups in particular ought always to be kept in a cool place.

In all pharmaceutical processes, the use of copper, brass, or leaden vessels should be most carefully avoided.

PHARYNX, in anatomy, the muscular bag at the back part of the mouth. It is shaped like a funnel, adheres to the fauces behind the larynx, and terminates in the œsophagus. Its use is to receive the masticated food, and to convey it into the œsophagus.

PHEASANT, COCK and HEN, or *Phasianus*, a genus of birds, consisting of fifteen species, scattered over the globe; they are distinguished by a short strong bill; cheeks covered with a smooth naked skin; the legs generally with spurs. The following are the chief:

The *Gallus*, or Cock and Hen, too well known to need description; fifteen varieties: the wild cock,—the common cock,—the crested cock—the Darking cock,—frizzled cock,—the Persian cock,—the Dwarf cock,—the bantam cock,—the rough-legged cock,—the Turkish cock—the Paduan cock,—the negro cock,—the crowned hen,—the horned cock,—and the silk cock. The cock and hen came originally from Asia. The common hen is, perhaps, the most fertile of all birds; if well fed, excepting about two months in the moulting season, she frequently lays an egg a day. When in her wild state, she begins to sit upon her eggs after laying fifteen or sixteen; and it is only from the circumstance of taking away the eggs, that she produces a greater number when tame. For farther particulars relative to the cock and hen, see BANTAM, CHICKEN, COCK, EGG, HATCHING, HEN, INCUBATION, &c.

The *Mexicanus*, or Courier pheasant; is tawny white, tail long, shining green; inhabits New Spain; eighteen inches long; slow in flight; but runs very fast.

The *Cristatus*, or Crested pheasant, is brown above, beneath reddish white; head crested; inhabits New Spain; twenty-two inches long; feeds on serpents, worms, and insects.

The *Colchicus*. This species is the pheasant properly so called, and comprises the following varieties; the Common pheasant, rufous, head blue;—the

Ringed pheasant, collar white;—the Variegated pheasant, white varied with rufous;—the White pheasant, white with small black spots on the neck;—Pied pheasant, rufous, varied with brown;—Turkey pheasant. Inhabits Africa and Asia, from two to three feet long; domesticated every where; in breeding time, above the ears on each side, is a golden feathered tuft like a horn.

The *Superbus*, or Golden Chinese pheasant, is rufous, varied with green and blue; without spurs; inhabits China; perhaps only a variety of the last species.

From its size and the shortness of its wings, the pheasant is necessarily a bird of heavy flight. Of course, it has never been able to cross the broad seas which separate the old from the new continent. It is, however, reared in St. Domingo, where it was taken by the Spaniards. Of all birds, except the peacock, the pheasant has the most beautiful and finely variegated plumage. The several varieties are occasioned partly by climate, and partly by domestication. In its wild state, the pheasant feeds like the rest of the gallinaceous tribes, upon all kinds of grain and herbage. The hen makes a rude nest on the ground in some secret place; the number of her eggs vary from twelve to twenty; when they are carried away, she continues to lay like the common hen. When young they are difficult to be reared, because they must be supplied with ant eggs, their only proper food at that period. From its size and delicacy of its flesh, the pheasant is, of course, a valuable bird.

The *Argus*, or Argus pheasant, is pale yellow, spotted with black; face red; inhabits Chinese Tartary, and is as large as a turkey.

PHEASANT'S EYE, or *Adonis*, a genus of plants, comprising eight species, common to Europe and Africa, one the *Autumnalis*, Wild pheasant's eye, or corn adonis, found in our own corn fields. The beautiful scarlet blossoms of this plant, greatly recommend it as a garden flower; they are sold in London under the name of Red morocco flowers.

PHILLYREA, or MOCK-PRIVET, a genus of plants, consisting of three species, as follow: the *media*, or Lance-leaved phillyrea, an evergreen shrub, varying in the shape of its leaves, a native of the South of Europe; the *angustifolia*, or Narrow-leaved phillyrea, a native of Spain; and the *latifolia*, or Broad-leaved phillyrea, with ovate, heart-shaped leaves. These shrubs are hardy enough to thrive in the open air of our own climate; and never lose their leaves but in very severe winters, being soon, however, renewed on the return of summer.

Phimosis. See PARAPHIMOSIS.

Phlebotomy. See BLOOD-LETTING.

PHLEGMASIA DOLENS, a disease, which principally affects lying in women, and chiefly those whose limbs have been pained or anasarcous during pregnancy, or who do not suckle their offspring. It rarely occurs oftener than once in the same female. It generally begins with coldness and shivering, these are succeeded by heat, thirst, and other symptoms of fever; and then pain, stiffness, and other symptoms of inflammation on the surface of the body take place. These generally begin in the loins, the bottom of the belly, or the groin, on one side or in the hip, or top of the thigh, and corresponding labium pudendorum. Although there is a sense of pain, weight, and stiffness in these parts, and increased by exertion, and they are hot and tender to the touch, yet they are not discoloured. The pain is sometimes of the most excruciating kind; and extending along the thigh, the labium pudendorum becomes greatly swelled, when the pain is sometimes alleviated. It next extends to the knee, the whole thigh becoming swelled; and at length it extends down the leg, and the whole limb becomes swelled so as frequently to become twice its natural size. It sometimes begins in the foot, and ascends upwards, one limb only is, in general, thus affected; but sometimes, on the complaint ceasing in one limb, it begins in the other. After some days, generally from two to eight, the fever diminishes, and the swelling, heat, and pain of the limb abates, and the disease disappears. But sometimes a suppuration takes place in one or both legs, and ulcers are formed which are difficult to heal; and sometimes, but rarely, gangrene has intervened. In a few cases the patient has been destroyed by the violence of the disease, before either suppuration or gangrene has occurred.

From this description of the disease, it is clearly one not to be managed by the domestic prescriber, and, therefore, the best medical advice should at once be had.

PHLEGMON, an inflammation, of a bright red colour, with a throbbing and pointed tumour, tending to suppuration.

Phleme. See FLEAM.

PHLOAS, a genus of bivalve animals, which perforate clay, spongy wood, and stones, while in their younger state; and as they increase in size, enlarge their habitation within, and thus become imprisoned; they contain a phosphoric liquor of great brilliancy in the dark, and which illuminates whatever it touches or happens to fall on. Although putrescency is necessary for the discharge of light possessed by phosphorescent fishes, in the phloas, on the contrary, the light is rendered brighter in proportion to the freshness of the animal. It is probable that this animal contributes to the luminous appearance of the sea. The genus consists of twelve species, three of which are common to the seas of our own coast. The *dactylus*, having an oblong shell, with reticulate, subspinous striæ on the upper part, inhabiting the rocks of Europe, and luminous by night, is entirely white, with sometimes an ochraceous cast. The *pusilla*, has also an oblong shell, with arched striæ, is white and brownish; inhabits America and India, and penetrates the bottom of ships. The *hians*, inhabits the American islands, and perforates calcareous rocks and corals.

PHLOGISTON, the principle of combustion, according to the theory of Stahl. It is a term, however, which the superior knowledge of modern chemistry has completely superseded; and is never, at the present period, used by any correct chemist.

PHOSPHATE, a combination of the phosphoric acid, with an alkaline or metallic base, &c. See the following articles.

PHOSPHATE OF SODA, a neutral salt, obtained by saturating the impure phosphoric acid, obtained from calcined bones by sulphuric acid, with subcarbonate of soda; the liquor is filtered, evaporated, and set aside to crystallize. It is a mild cathartic, excellently adapted for children, and others, who have a fastidious taste. It may be given dissolved in gruel or broth, made without salt, by which its taste is very effectually covered. The dose is from six drachms to two ounces.

Phosphorescence. See LUMINOUS SUBSTANCES.

Phosphoric acid. See PHOSPHORUS.

PHOSPHORUS, a very peculiar substance, obtained chiefly from animal bones. In consistence, it resembles wax; when pure it is nearly colourless, semitransparent, and flexible. Its specific gravity is 1,770. It melts when excluded from the air, at 105°. If suddenly cooled after having been heated to 140°, it becomes black; but if slowly cooled remains colourless. At 500° it boils and rapidly evaporates. When exposed to air, it exhales luminous fumes, having a peculiar smell, similar to garlic. At a temperature of about 100° it takes fire and burns with intense brilliancy, throwing off copious fumes. It may be obtained by distilling phosphoric acid with an equal weight of charcoal, at a red heat.

This mixture is put into a coated glass, or earthen retort, placed in a small portable furnace; the tube of the retort should be immersed in a basin of water. A great quantity of gas escapes, and when the retort has obtained a bright red heat, a substance looking like wax passes over; this, which is impure phosphorus, may be rendered pure by melting it under water, and squeezing it through a fine piece of shammy leather.

If, instead of burning phosphorus with free access of air, it be heated in a confined portion of very pure air, three compounds of phosphorus with oxygen are the result, each characterized by distinct properties. The first is a red solid, consisting of phosphorus and oxide of phosphorus, the second, or *oxide of phosphorus*, is a white substance, more volatile than phosphorus, and is the same with which phosphorus becomes encrusted, when kept for some time in water: it is this substance which is generally used in the phosphoric match-boxes. To prepare it for this purpose, a piece of phosphorus may be put into a small phial, and melted and stirred about, with a hot iron wire, so as to coat its interior.

Besides these there are three *acid* compounds of phosphorus and oxygen, which are termed *hypophosphorous*, *phosphorus*, and *phosphoric* acid. The most important of these is the *phosphoric acid*, which may be obtained in several ways. It is most economically obtained by the decomposition of bones, which contain a considerable quantity of phosphate of lime. The following is the process: on twenty pounds of calcined bones, finely powdered, pour 20 quarts of water and 8 pounds of sulphuric acid, diluted with an equal weight of water. Let these materials be stirred together and simmered for about six hours. Then put the whole into a conical linen bag to separate the clear liquor, and wash the residuum till the water ceases to taste acid. Evaporate the strained liquor, and when reduced to about half its bulk, let it cool. A white sediment will form, which must be allowed to subside; the clear solution must be decanted, and boiled to dryness, in a glass vessel. A white mass will remain, which is the dry phosphoric acid. This may be fused in a crucible and poured out in a clean copper dish. A transparent glass is obtained, containing phosphate and a little sulphate of lime. Phosphoric acid is a deliquescent substance; when fused it has been called glacial phosphoric acid. It is inodorous, very sour, volatile at a red heat, but unchanged by it. As commonly prepared, it is an unctuous fluid. Its specific gravity is 2.

Phosphorus has been occasionally given medicinally, on the continent, but it is not known as a medicine in this country. The only compound of phosphoric acid, used medicinally, is *phosphate of soda*. See that article.

PHOTOMETER, an instrument for measuring the intensity of light, and likewise the transparency of the medium through which it passes.

Phrenitis, or PHRENZY. See BRAIN, INFLAMMATION of.

PHRENOLOGY, CRANIOSCOPY, or CRANIOLOGY, are terms recently invented to express the study of the external form of the skull in men and animals, with a view of ascertaining the form, size, and respective functions of the subjacent parts of the brain, and of deriving thence indications relative to the natural dispositions, propensities, and intellectual powers of each individual. This novel science originated with Dr. GALL, a physician of Vienna, whose system, matured in conjunction with Dr. SPURZHEIM, has lately attracted much attention, and has been supported and opposed with considerable talent.

Various works have appeared relative to this subject, both here and on the Continent; but we think the question, as to the truth or fallacy of the system of these learned doctors, is far from being yet settled. We have paid some attention to the indications pointed out by these gentlemen, but are obliged to confess, that we have not been able to apply their system to those English skulls with which it has been our peculiar fortune only to come in contact. We would merely add, without either denying or affirming any thing relative to the truth of the theory, if phrenology be so abstruse a study that a favoured few only can ever obtain a knowledge of it, how can it be made available for the general benefit of mankind

—for the purposes of *education* and *moral conduct*—to which, we presume, it is designed to be applied ?

PHYRGANEA, a genus consisting of fifty-five species, a few American, the rest European, insects; about twenty inhabitants of our own country. They are seen in a summer evening floating in the air in large masses, and are eagerly devoured by swallows ; the larve is six-footed, found at the bottom of shallow water, inclosed in a tube composed of sand, straws, or chips of wood, and is known to fishermen by the name of caddy, or caddo. The *grandis*, with brown wings, is one of the largest species, and is the common caddy, or cadew, bait of anglers.

Phthisis. See PULMONARY CONSUMPTION.

Physic. See MEDICINE.

PHYSIC-NUT, or *Jatropha*, a genus of plants consisting of thirteen species, natives of the East or West Indies, or South America. The following are the chief :

The *Gossipifolia*, having leaves five-parted, with ovate, entire, ciliate lobes. The stem rises about three or four feet, and then divides into various branches, covered with a light greyish bark. The corol is deep red, and consists of five petals ; the berries are blackish ; the seeds are peculiarly grateful to the ground-dove. The *curcas*, has heart-shaped leaves ; the stem rises ten or twelve feet ; flowers green ; nuts covered with a green husk, containing an almond-shape kernel. The *multifida*, has red flowers in bunches, resembling bunches of coral. The *odoratissimum*, has yellow and odorous flowers. The *grandiflorum*, has an upright stem, and flowers reddish beneath, a native of Madeira. The *azoricum*, has white flowers ; a native of the Azores. The *hirsutum*, is a tall tree of India, with a dark purple bark, opposite leaves and white flowers.

The first species flowers well in this country, but never produces fruit, and is easily propagated by laying down the branches, which will take root in one year, and may then be cut from the old plant, and transplanted where they are designed to remain. It may also be propagated by cuttings, which should be planted early in the autumn. The second species may be propagated either by seeds or layers.

PHYSICIAN, or *medicus*, a term applied to a person who exercises the medical profession, under the sanction of a diploma, obtained from some university, after a regular course of study. No person, however, can practise as a physician in London, or within seven miles thereof, without a license from the London college of physicians.

By several decisions, it has been determined, that a physician cannot bring an action for the recovery of his fees. By the 1st of Geo. III. a physician is subject to a penalty of forty shillings, for every prescription which he writes, in which any contraction is used, and in which the names of the medicines, and the quantities ordered, are not written at full length. Notwithstanding this law, we believe that it would be difficult to find, at the present period, a physician's prescription which has no contractions in it, and in which the names of the medicines are not abbreviated.

The office of a physician is of great dignity and consequence, and should not be undertaken without a proper sense of the greatness and importance of the trust ; nor without a suitable education previously to its being entered upon ; whether that education should be exclusively academic, admits of great question. Upon the whole, we should consider those circumstances the best for the formation of a physician, in which a liberal education and long practice and acquaintance with medicine are combined : for we cannot think that a young man, just past his majority, is a proper person to emerge at once from the bowers of the university, and prescribe from theory alone.

Although we have numerous physicians in this country who do honour to their profession, and to human nature, yet it must still be admitted, that there is so much mystery and technicality about the practice of medicine altogether, as to render it, in the estimation of the public, too often a craft, in which interest is the chief ingredient. Nothing, perhaps, has tended more to give this opinion currency, than that affectation of learning, still universally adopted by physicans, and other medical practitioners, of writing their prescriptions in *Latin*. Much has been said in defence of this practice, but we can see no solid reasons for it; the knowledge and inquiry which is abroad all tend to render it not only useless but ridiculous; and the sooner the practice of writing in plain English is adopted, the more respectable, and intrinsically useful, will the healing art become: quackery and mystery are at all times expedients to which the physician should never descend. In a word, the physician who would be respectable, must be respected; and respect is best obtained by intelligence, candour, kindness, and benevolence: and he who unites, in his practice, these qualities, will not fail to obtain the confidence of his patient, and the general respect of mankind, although he should write his prescriptions in plain English, and endeavour to diffuse, by every means in his power, the best principles and knowledge of his hitherto imperfect art.

To conclude this article, we may add, that the physician who hurries from patient to patient, and is rather intent upon the number of guineas which he can obtain, than of the cures or relief which he may effect by a careful study of the disorders for which he is called upon to prescribe, may, indeed, solace himself with his dexterity; but he can never aspire to the dignity of a great physician, or a good man. Human life, and human sufferings, are too important and momentous to be put in competition with the pertness of conceit, or the affectations of folly.

PHYSIOGNOMY, that science by which the dispositions of mankind are discoverable by the conformation of the body, and especially by the features of the countenance. This science may be considered as still in its infancy. Many facts, it is true, have been noted and commented upon, but they are still in too insulated a state to warrant such conclusions as may be made generally useful to mankind. We have ourselves paid considerable attention to this subject, and could detail facts which we are quite convinced would be in accordance with the judgment of our readers; yet, as we are not aware that the detail, in this work at least, could be made practically useful, we omit it. We feel convinced, however, that the study of physiognomy is one of which we should not lose sight, and that the science of education may be much improved by it.

PHYSIOLOGY, the science which treats of the actions and powers of animated bodies.

PHYTOLITHUS, a genus of petrifactions, consisting of a vegetable, or some parts of it, changed into a fossil substance. Six species have been enumerated; these are, the whole plant, the roots, the trunk and stalks, the leaves, the flowers, and the seeds. These petrifactions have been found in various parts of Europe, Siberia, &c.

PHYTOTOMA, a genus of birds consisting of one species only, the *rara*, with a thick bill, half an inch long, toothed on each side; body above dusky ash, beneath paler; inhabits Chili; has a harsh interrupted cry, *ra, ra*, whence its specific name; feeds on vegetables, which it cuts down near the roots with its bill, as with a saw; and is, on this account a pest to gardens.

PIA MATER, a thin membrane, firmly attached to the convolutions of the cerebrum, cerebellum, medulla oblongata, and medulla spinalis. Its use is to distribute the vessels to, and contain the substance of, the brain. See BRAIN.

PICRAMNIA, a genus of plants consisting of two species, of which the *antidesmia*, or MURJOE-BUSH, is chiefly worthy of note. It is found in the copses of Jamaica, rising about eight feet high; the negroes make a decoction of the berries, which are black, and drink it in dyspepsia and syphilis.

Picrania, or bitter wood. See QUASSIA.

Pig. See **Swine**.

Pig, the Guinea. See **Guinea Pig**.

PIG, of Lead, the eighth of a fother, amounting to 250lbs. weight.

Pig-nut. See **Earth-nut**.

PIGEON, or *Columba*, a genus of birds, consisting of eighty-two species, scattered over the globe. They are divided into two sections, one having the tail even and moderate, the other long and wedged. The former contains the most numerous species. The following are the most worthy of remark:

The *Domestica*, too well known to need description, forms a numerous family of itself; the following are its varieties:—the common pigeon, the stock dove, the rock, the Roman, the crested, the rough-footed, the Norway, the Barbary, the Jacobine, the laced, the turbit, the shaker, the tumbler, the helmet, the Turkish, the carrier, the powter, the horseman, the smiter, the turner, and the spot pigeon. Inhabits and is domesticated in almost every part of Europe and Asia; fourteen or fifteen inches long; lays from nine to eleven times a year. Eggs two, white; feeds on grain; term of incubation from fifteen to eighteen days.

The *Œnas*, or Stock-pigeon, often confounded with the domestic pigeon, is bluish; neck glossy green; double band on the wings and tip of the tail, blackish; throat and breast claret colour; claws black; inhabits old turrets, and rocky banks of Europe and Siberia, and migrates southerly in winter; fourteen inches long.

The *Palumbes*, or Ring-dove, is cinereous; tail feathers black on the hind part; primary quill-feathers whitish on the outer edge; neck, each side white; inhabits Europe, occasionally Siberia; lives in woods, and builds in trees; seven and a half inches long.

The *Turtur*, or Turtle-dove; tail feathers tipt with white; back grey; breast flesh-colour; on each side of the neck, a spot of black feathers, tipt with white: two other varieties. Inhabits Europe, China, and India; twelve inches long; migrates in flocks, and breeds in thick woods; very shy and retired; a pest to fields of peas. The supposed faithfulness of this bird to its mate, if we judge by the domesticated pigeon, is more than questionable.

The *Passerina*, or Ground-pigeon, has the body purplish, wings and tail dusky: bill and legs red: three other varieties; inhabits the warm parts of America; six and a quarter inches long; feeds on seeds; frequents rocky and mountainous places.

The *Migratoria*, or Passenger-pigeon, has the body cinereous, beneath vinaceous; breast rufous; wing coverts spotted with black; sides of the neck purple; inhabits North America: flies in great flocks; troublesome to rice and corn-fields; from fifteen to sixteen inches long; another variety.

The *Coronata*, or Great-crowned Indian pigeon, is bluish, above cinereous; crest compressed, five inches long; inhabits New Guinea; size of a turkey; occasionally brought alive to England.

Of all the pigeon tribe the carrier and horseman pigeon are the most extraordinary. It appears that, by regular training, they may be taken a great distance from home, and yet they will, on being let loose, immediately fly to their accustomed habitation.

Pigeons are esteemed a delicacy of the table, especially when young and properly fed; but they are by no means equal, in any respect, to the common fowl. Indeed, except for curiosity, we can scarcely think them worth the attention which is often bestowed upon them. The habits and manners of these birds are, however, interesting; the mode in which they feed their young, by placing their bills in their mouths, and ejecting the food from their crops, by a sort of pumping, is peculiar to this tribe.

Barley is perhaps the best food for young pigeons; but pigeons eat a variety of other grain, such as wheat, oats, peas, beans, &c.

Although domesticated pigeons breed very often in the year, the stock-dove, or wild pigeon, very rarely breeds more than twice a year; the increased fecundity of the tame pigeon arising merely from domestication.

PIGMENT, a preparation in a solid form, used by painters for giving either colour or solidity to their paints. See COLOUR MAKING.

Pigmy. See MONKEY.

PIKE, or *Esox*, a genus of fishes, comprehending fifteen species, found in various seas and rivers of Europe, Asia, and America; four of them in our own seas and rivers; the following are the chief:

The *Osseus*, or Great gar-fish, has the upper jaw longer than the lower; scales bony, tail quadrangular; inhabits North America and Asia, and is occasionally found on the coast of Sussex; two feet long.

The *Belone*, Sea-pike, or Gar-pike, has each jaw-bone long; inhabits the deeps of the ocean, and migrates annually towards the coasts, always preceding the mackerel; seldom eaten; from one and a half to four feet long.

The *Lucius*, or Common pike, with a snout depressed; jaws nearly equal; a second variety with the upper jaw a little shorter than the lower; body above black; the sides cinereous, spotted with yellow; beneath white, dotted with black; scales small, oblong. The pike, like the carp, grows to a great age, sometimes ninety years, or upwards. Inhabits most lakes of Europe, Lapland, and Northern Persia; the second variety North America; found also in the Caspian sea; swims swift; from one to eight feet long; extremely voracious; feeds on almost any thing, even its own tribe. A pike in the Marquis of Stafford's canal, at Trentham, once attempted to swallow a swan, and actually got the head into its gorge; but could get no more down, and died in the effort, as did also the swan. The pike spawns from February to April. The river pike affords an excellent dish, and is preferable to those caught in lakes or at sea; it is in season during winter, and is one of the most wholesome of fishes. It is usually caught with a hook and line.

The *Saurus*, or Saury pike, inhabits the northern seas, and sometimes descends to our own coasts; body eel-shaped; eleven inches long.

Pilchard. See HERRING.

Pil-corn. See OAT.

Pile, the Galvanic, or Voltaic. See GALVANISM.

PILES, or *Hæmorrhoids*, are tumours, or excrescences, of different sizes, on the verge of, or just within the anus. If attended with a discharge of blood they are termed bleeding piles; when with no discharge of blood, they are called the blind piles.

The piles are sometimes so completely constitutional as to be productive of little or no inconvenience; in others they produce various disagreeable and troublesome sensations. When they are large, within the spincter of the rectum, and do not bleed, they very often hinder the descent of the alvine fæces during the effort to evacuate them, and there is reason for believing that many dyspeptic symptoms originate from this cause alone. The piles are sometimes accompanied with head-ach, vertigo, stupor, difficulty of breathing, sickness, colic pains, pain in the back and loins, and fever. They are also frequently attended with a very troublesome tenesmus, (see TENESMUS,) and heat and itching in the part. Although the piles occur in children, and sometimes produce in them tenesmus, and other unpleasant symptoms, yet they chiefly affect persons advancing in life; but all ages, sexes, and constitutions, are more or less liable to them.

The causes of the piles are various; but obstinate costiveness, voiding hard fæces, acrid purgatives, especially such as contain aloes; obstructions in the hæmorrhoidal vessels; the use of highly-seasoned food, and sweet wines; the indulgence in violent passions; and *sitting on damp ground*, have been mentioned as the chief, although there is no doubt that they originate very frequently from some disturbance of the functions of the liver, or stomach, or both.

When the discharge of the piles is periodical, occurs in hysterical, hypochondriacal, and gouty patients, or in others, when no inconvenience arises from it, and no debility induced, it may be considered a salutary evacuation, and should by no means be checked. In the cure, or removal of the inconveniences attending the piles, the first attention should be paid to the stomach and bowels. If dyspeptic symptoms are present, these should be obviated if possible, and the bowels be gently relaxed. The following opening medicine may be of service: Take of confection of senna one ounce; of precipitated sulphur and nitrate of potash, each one drachm; syrup of orange-peel a sufficient quantity to make an electuary, of which, the bigness of a nutmeg may be taken morning and evening.

In the blind piles, when they are of considerable size, attended with fever and other symptoms of an inflammatory kind, bleeding will be of service, both taken from the arm, and by leeches applied to the anus. In such cases, of course, diluents, and slightly stimulating food will be necessary. Where the piles appear externally, without bleeding, and a considerable protusion of the rectum has taken place, emollient fomentations and poultices may be applied, but the application of leeches is to be preferred.

In all cases of excessive bleeding, endeavours must be made to moderate the flux, even where the disease has occurred as a critical discharge. The ointment of galls, (see **Ointment**) may occasionally be of service in this as well as in the blind piles; but we doubt, in the latter case, whether astringents are not often injurious.

Persons subject to the piles ought to pay the strictest attention to their food and drink, and to guard against costiveness by having a prudent recourse to laxative medicines. Although aloetics are by no means, in general, advisable in this disease, yet it will, nevertheless, often be found that the bowels cannot be kept in a suitable state of laxity without them; and where they do not aggravate this complaint they may be, and often are, taken with great advantage. Such is frequently the inconvenience which many persons endure from the blind piles, that they never have an alvine evacuation without great pain: anointing the sphincter of the rectum with lard, previous to such evacuations, will very often prevent both the pain and many other inconveniences.

In extreme and violent attacks of this complaint a physician ought to be consulted.

PILE-WORT, or *Ranunculus ficaria*, is an indigenous perennial, growing in meadows and pastures. The leaves and roots of this plant have been used medicinally; the first as an antiscorbutic, and the latter applied in poultices to the piles; but modern medicine takes no notice of it.

PILL, a form of medicine resembling a small pea, and which is designed to be swallowed entire. Some persons find it very difficult to swallow pills. The best method is to fill the mouth with pure water, then hold the head back, drop the pill into the mouth and swallow the water and pill together.

Various useful pills will be found under **Colocynth**, **Costiveness**, **Galbanum**, **Gamboge**, **Iron**, **Quicksilver**, &c. &c.

Pills of aloes, with myrrh. Take of socotrine aloes, in powder, two ounces; of saffron and myrrh, of each, in powder, one ounce; of simple syrup a sufficient quantity to form pills. Beat them together into a mass. These were formerly called *Rufus's pills.* They are employed advantageously to stimulate and open the bowels in chlorotic, hypochondriacal, and other dyspeptic complaints. The dose is from ten grains to one scruple, given twice a day.

Pills. See **Oats**.

Pilot fish. See **Stickle bark**.

Pill of Coccia. See **Colocynth**.

PIMELIA, a genus of insects, comprehending one hundred and seventeen species, scattered over the globe, five or six common to our own country: found in dry deserts, gardens, and sometimes bowers; several in filth and manure. The *sulcata* is sold in Turkey as a specific against pain in the ears and the bite of scorpions; it is also boiled with butter, and eaten by the Turkish ladies to cause them to grow fat.

Pimento. See ALLSPICE and MYRTLE.

PIMPERNEL, or *Anagallis*, a genus of plants, consisting of six species, having a wheel-shaped corol, capsule opening transversely all round; staminas hairy. The *arvensis*, or Scarlet pimpernel, growing in our corn-fields, is a beautiful plant. The *tenella* is found in our marshes.

Pimpinella. See ANISE, and BURNET.

PIN, a well-known little instrument, usually made of brass wire, whitened by a particular process, and chiefly used by females in adjusting their dress.

Pins are sometimes accidently swallowed, in consequence of their being imprudently placed in the mouth, a practice to which we are sorry to observe too many females are accustomed. If they stick in the gullet, the means recommended must be pursued as mentioned under the article ŒSOPHAGUS. But if they have passed into the stomach, considerable draughts of oil of almonds, or olive oil, or the whites of six eggs, have been recommended to be taken; and at the same time vomiting excited by emetic tartar, given to the extent of four or five grains dissolved in water, so that the pins may be ejected enveloped in the oleous or mucilaginous elements. But we cannot avoid thinking this remedy at least doubtful, and should be disposed rather to recommend, particularly if, when in the stomach, they produce no pain or immediate inconvenience, that oleous and mucilaginous fluids and food should be given in order to envelope them, to sheath the bowels, and facilitate their evacuation through the intestines. In both cases, however, we must not forget, that we have but a choice of evils; and that vomiting, as well as the contrary practice, may or may not be the best or worst method which could be adopted, depending upon the manner of their evacuation.

PIN-BONE, in anatomy, the haunch bone, or ilium.

Pinaster. See PINE.

Pinchbeck. See COPPER.

PINE, or *Pinus*, a genus of trees, comprehending thirty-three species, a few Asiatic, more European, most American trees. They are sub-divided into two sections, one with the leaves numerous, from the same sheathing base, constituting the tribe of firs; the other with the leaves solitary, surrounding the branches, being pines. The following are principally deserving of notice:

The *Silvestris*, or Scotch fir, with leaves in pairs, rigid; younger cones peduncled, recurved, dependent. This tree yields a red or yellow deal of great durability; grows wild in Scotland.

The *Pinaster*, or Wild pine, is a lofty tree, with wide-spreading branches, which when young are full of leaves, but become bald by age, or when in a confined spot. A native of the South of Europe.

The *Pinea*, or Stone pine, has the leaves in pairs, cones ovate, very large; a native of the South of Europe.

The *Strobus*, or Weymouth pine, has the leaves in fives; cones cylindrical, smooth, longer than the leaves; a native of North America. It rises often to the height of a hundred feet, and is peculiarly valuable for its elegance; bark smooth, delicate; wood employed for masts of ships. It has been latterly very largely propagated in this country.

The *Abies*, or Spruce fir, with square solitary leaves, and cylindrical cones, eight or ten inches long; grows tall and upright; a native of Europe and Asia; this species includes the Norway spruce, and long-coned Cornish spruce; the former is equally valuable for its beauty as a tree, as for its wood when cut for timber; it forms the white deal of the joiners, and produces considerable quantities of tar and pitch.

There are several other species called *spruce fir*, viz. the *alba*, the *nigra*, and the *rubra*, all natives of North America; from the *nigra* and the *rubra* is obtained the *essence of spruce* of the shops, see SPRUCE. Another, the *Canadensis*, or Hemlock spruce, is a native also of

North America; an elegant tree; its bark is used in tanning.

The *Picea*, or Silver fir, has solitary, flat, glaucous leaves, branches horizontal; a native of the Alps; very hardy, and will grow in almost any situation except a very wet one.

The *Balsamea*, or Balm of Gilead fir, has also solitary flat leaves; cones cylindrical; a native of Virginia. It is a beautiful upright tree, with fragrant leaves; the branches as ornamental in their regularity as they are desirable for odour; it requires a deep rich soil, and will flourish in no other.

The *Cedrus*, or Cedar of Lebanon, has facicled perennial leaves; cones ovate, obtuse, erect; this is also an elegant and odoriferous species. Its wood is sometimes counterfeited, but the want of fragrance detects it. Cedar is reputed almost incorruptible; its bitter taste is no doubt its chief preservative, as worms will not touch it. Among the ancients, a juice was obtained from this wood, with which they varnished or stained their books, writings, &c. to prevent them from rotting. It is a native of Syria, chiefly about mount Lebanus; nor has it yet been found any where else as an indigenous plant. It does not appear, however, that this tree is the cedar of Lebanon mentioned in the scriptures.

The *Larix*, or Larch, has fascicled deciduous leaves; cones ovate, oblong; a native of the Alps; grows quickly, and reaches fifty feet high.

All sorts of pines are propagated by seeds, which are obtained from the hard woody cones. The best season for sowing them is about the end of March. When the seeds are sown, the places should be covered with nets to keep off the birds, or, when the plants begin to appear, the birds will peck off the tops and thus destroy them. If the seeds of pines be suffered to remain in the cones, they will continue good for years.

The introduction of the larch into the British isles is, perhaps, the most important acquisition in respect to timber in modern times. It adapts itself to a variety of soils and exposures; its wood is of the best quality, even though raised in elevated situations, and on a soil not very rich. It will thrive at the height of 1200 feet above the level of the sea, and even higher. The wood is closer in its pores, and has fewer large knots than the Scotch fir. It grows also in situations where the Scotch fir cannot be raised to any advantage. It resists the effects of being alternately wet and dry better than any other wood, except perhaps the oak; hence it is peculiarly well calculated for sub-aquatic purposes; amongst others, it is well adapted for gate-posts. It is, also, peculiarly fitted, from its burning with difficulty, for various important uses in architecture. Its growth is so rapid, that, if the ground be tolerable, it becomes, in thirty years, fit for various household and other purposes; it is well adapted to mill-work, and in ship-building may be, in many instances, used as a substitute for oak. Its bark contains, also, a considerable quantity of tannin.

In some instances the larch is liable to disease, and its leaves are destroyed by insects, more especially in low and damp situations. This is attributed to their being planted too close together, as where they stand bold and single they are not liable to it; or it may arise from improper seed. It is not improbable that the larch originally introduced from the mountains of Carniola, may degenerate in this country; hence it would be advisable to import annually, at least a portion of the seed from the Alpine regions.

The Scotch fir is well calculated for peculiar situations; it thrives on the driest and thinnest soils; on the poorest exposed moorish ground, if not wet or over-grown with rein-deer moss; and may be planted successfully wherever there is short heather growing above gravel or sand; on sandy heaths near the sea-shore; and on mossy soils less than two feet in depth, but bottomed with gravel, not clay: it must have a sub-soil permeable to water, and hence a clay bottom is fatal to it. It thrives to the height of from 1000 to 1200 feet above the level of the sea, and its timber improves with the increased height of its elevation; but high winds are very destructive to this tree; and a fall of snow will destroy, or greatly injure in the course of one night, sometimes one third of a fir plantation.

The timber of this tree is used for various architectural purposes, and also for ship-building. It produces a variety of useful substances, among which *turpentine, pitch,* and *tar,* may be mentioned as of great value. See those articles. It grows fast; the green boughs keep deer completely well in winter; and they save much hay if given to sheep in snowy weather; the boughs are also of great use for firewood and fences. One of the most important uses of this tree is, to nurse or shelter young plantations, in which it is desired to rear more valuable timber. In such case, the Scotch fir must be gradually pulled up, so as to furnish the trees, of which the plantation is finally to consist, with the proper supply of sun and air.

The Pineaster is considered as peculiarly adapted for maritime situations, from resisting the gales of the sea; and the Weymouth pine is also well suited to the same purpose.

Besides the deal which the different kinds of the pine furnish, and also turpentine, pitch, tar, &c, the bark is occasionally made, by the fishermen of Scotland, into ropes; and necessity has compelled the inhabitants of Sweden, Lapland, and Kamschatka, to convert it into bread; for this purpose, the soft, white, succulent, interior part of the bark is chosen and dried in the shade. When they have occasion to use it, it is first toasted at the fire, then ground, and after being steeped in warm water, to take off the resinous taste, it is made into thin cakes and baked for use: on this singular food the poor inhabitants live, it is said, for a whole year. It is to be lamented, however, that any human being should be obliged to live upon such miserable food.

The young and fresh fruit of the stone pine is eaten in some countries in the same manner as almonds are here, either alone or mixed with sugar.

PINE APPLE, or *Bromelia*, a genus of plants, consisting of ten species, all natives of South America, except the *paniculigera,* which is obtained from India, and the *pinguin,* and the *bracteata,* which are indigenous to Jamaica. Every species produces, in its native climate, a pine-apple of some kind or other, but that chiefly cultivated, and of which there are many varieties, in the hot-houses of our own country, is the *ananas,* having leaves ciliate, with sharp spines and comose spikes. These are propagated by planting the crowns, which grow on the fruit, or the suckers, which are produced from the plants, or under the fruit. The suckers and crowns must be laid to dry in a warm place for four or five days or more: for if immediately planted they will rot. Either a good rich garden mould, or fresh earth from a pasture, well mixed with one-third of the rotten dung of an old cucumber bed, and neither sifted finely, will be the proper soil for them In the summer season, when the weather is warm, the plants must be watered every other day, but in small quantities at a time; in a cool season, twice a week will be sufficient; and, once a week, during the summer season; the leaves also should be watered. These plants require new potting twice in a season; the first about the end of April, when the crown and suckers of former years' fruit, which have remained all the winter in those pots, should be shifted into larger ones. The second is towards the latter end of August or beginning of September, when we should shift those plants which are of a proper size for fruiting the following spring. At each time of shifting the plants, the bark-bed should be stirred up, and some new bark added; they may remain in the tan till the beginning of November, or later if the season be mild; they requiring no fire before this time. After this the plants are to be placed in stoves having pits for the hot-beds; these stoves are built in different ways, according to the fancy of the contriver. During the winter season, the plants will not require water oftener than every third or fourth day; nor should they have much at a time.

The other species of pine must be propagated by seeds, procured from the places where they grow naturally, as they produce no seed in this country. They must be sown in pots containing the same kind of earth as mentioned above, and plunged into moderate hot-beds of tanners' bark, and be watered two or three times a week. In about five or six weeks the plants will appear, and in a month will be fit to transplant; when each plant must be planted in a separate pot, and plunged again in a moderate hot-bed, after which they are to be treated the same as the *ananas.*

Pine-apples generally ripen in this country from July to September. Their maturity is known by the strong aromatic odour which they exhale, and by the facility with which the crowns or protuberances yield on pressure with the hand. They should be cut at such time, as by remaining on the plants afterwards, their flavour is dissipated; nor will the flavour be retained long after the fruit is removed from the plant. This delicious fruit is said to possess cordial and exhilarating properties; but from its scarcity and trouble in being reared, there is no great probability that it will be often eaten to excess; when it is so, it is no doubt injurious; as well as, at all times, to the dyspeptic and valetudinarian.

PINE, the SCREW, or *Pandanus*, a genus, consisting of one species only, the *odoratissimus*, or Sweet-scented screw-pine, a native of Asia. The branches issue from large fusiform roots, descend to the ground and divide; leaves clasping, spinous. The perfume afforded by the tender white petals, chiefly of the male flower, is the richest and most delightful of the vegetable world. As a stove plant, it has a fine ornamental effect in our own country, from its large spreading foliage. It is best propagated by seeds sown in light earth, in pots plunged into a tan-bed.

PINK, or *Dianthus*, a genus, comprising thirty-two species, chiefly European plants; five or six indigenous to our own country. They may be subdistributed as follows: with aggregate flowers,—with solitary flowers, several on the same stem,—with a one-flowered herbaceous stem;—with a shrubby stem;—the following are those chiefly cultivated for ornament.

The *Barbatus*, or Sweet William, with flowers in clustered heads, and lanceolate leaves; a native of Germany. It is propagated by seeds and pipings.

The *Caryophyllus*, or Clove-July-flower, found wild on old walls in our own country, with solitary flowers; scales of the calyx ovate, acute, very short; petals crenate, beardless. Two other varieties, with flowers double and variegated. This last is the real CARNATION, assuming, in the different individuals, an infinite and most playful diversity of hues and stains. It is propagated by seeds, slips, layers, or pipings. The clove-July-flowers used medicinally, are those of a deep crimson hue, and of an aromatic smell like cloves.

A *syrup of clove-July-flowers* is ordered by the Edinburgh and Dublin Colleges to be made thus: take of the fresh petals of clove-July-flowers, freed from their claws, one part; boiling water four parts; refined sugar seven parts. Macerate the petals in the water for twelve hours, then add the sugar to the strained liquor, and dissolve it with a gentle heat.

This is a convenient colouring syrup to sweeten cordial medicines, but is of no medical importance whatever.

The *Deltoides*, or Common pink, with solitary flowers, scales of the calyx ovate, lanceolate, acute, generally only two; leaves rather obtuse, somewhat pubescent; petals crenate; found wild in our own pastures, where there is also another variety to be met with, with four scales, and white petals. Propagated as the last, but chiefly by slips.

The *Chinensis*, Chinese, or Indian pink, has also solitary flowers; scales of the calyx tubulate, spreading, foliaceous, as long as the tube; petals crenate; leaves lanceolate; a native China; rises about fifteen inches high.

and among us, flowers from July to November.

PINK, a term applied by painters to various pigments, such as brown pink, Dutch pink, English pink, and rose pink. See COLOUR-MAKING.

Pink, Indian. See WORM-GRASS.

PINNATE, a term in botany, applied to those leaves having several leaflets fastened to each side of a simple petiole. The common fern has pinnate leaves.

PINT, a measure of capacity: in this country the pint wine measure contains sixteen ounces, or $28\frac{7}{8}$ cubic inches; the beer, or ale pint, contains $35\frac{1}{4}$ cubic inches.

Pintado. See GUINEA HEN.

PIP, a disease among poultry, consisting of a white thin skin or film, which grows under the top of the tongue, and hinders their feeding. It is supposed to arise from want of water, from drinking dirty water, or eating filthy meat. It is cured by pulling off the film with the fingers, and rubbing the tongue with salt.

PIPE, a vessel, or measure, for wine and other things measured by wine-measure. It is usually reckoned two hogsheads, or 126 gallons; but in commerce the pipe measures differently, as follows:

	Gallons.
The pipe of Port wine is - - - - -	138
Madeira is - - - - -	110
Vidonia is - - - - - -	120
Sherry is - - - - - -	130
Lisbon and Bucellas	140

The pipe of port is seldom accurately 138 gallons, and it is customary in trade, to charge what the cask actually contains, be it more or less than the estimated quantity.

Pipe clay. See CLAY.

PIPE FISH, or *Sygnathus*, a genus of fishes, comprehending eight species, inhabitants of the European, Indian, and Mediterranean seas, or around the Cape of Good Hope; four common to our own coasts. The following are the chief:

The *Barbarus*, or Longer pipe-fish, is without caudal or anal fins; body six-sided; two feet long; thickest part of the body, not exceeding the diameter of a swan's quill; colour olive-brown, with bluish streaks; an inhabitant of the European seas, and our own coasts. Viviparous

The *Ophidion*, or Little pipe-fish, is from one to two feet long; found on our own coasts; not viviparous.

The *Acus*, or Needle-fish, is found also on our own coasts; from two to three feet long.

The *Hippocampus*, Hippocamp, or Sea-Horse, has obtained its name from the resemblance its head bears to that of a horse: it bends the body into different curvatures like an eel, and is marked all over with circular incisions, resembling those of the insect tribe; from nine to twelve inches long; thickness about an inch; colour dark green, variegated with light blue spots. Inhabits the Mediterranean, Indian, and Northern seas.

Piperidge. See BARBERRIES.

PISTACHIA, a genus of plants comprising six species; natives of the south of Europe, Barbary, and Asia; the following are the chief:

The *Vera*, Fistic-nut-tree, or pistachia-nut-tree, has leaves unequally pinnate; leaflets somewhat ovate, recurved; some of the trees produce male, others female flowers; and some, when old, have both on the same tree. It is a native of Persia and India, and may be propagated by seeds or nuts procured from abroad, planted in pots filled with light earth, and plunged in a moderate hot-bed; as the plant grows, it should be gradually hardened to bear the external air.

The nut is about the size and shape of a filbert; the kernel has a sweetish unctuous taste, resembling sweet almonds, and, like almonds, it affords an oil, which may be formed into an emulsion.

The *Terebinthus chio*, or Cyprus turpentine-tree, has leaves like the last; leaflets seven, ovate, lanceolate. A native of Barbary and the south of Europe, flowering with us in June and July, and may be propagated as the last. It furnishes the chio turpentine of the shops. See TURPENTINE.

The *Lentiscus*, Lentisk, or Mastic-tree, has leaves abruptly pinnate, leaflets lanceolate: rises to the height of twenty feet. May be propagated by laying down the younger branches. Gum mastic is obtained from this tree. See MASTIC.

PISTIL, in botany, the pointal of a plant: its appearance is that of a column, or set of columns, in the centre of the flower, and, when perfect, consists of three parts, viz. the germen, the germ, or ovary; the style; and the stigma.

Pit-coal. See COAL.

PITCH, an adhesive black resinous substance, obtained by inspissating tar. Considerable quantities of pitch are made in this country by distilling from tar its oleous and volatile parts, commonly called *oil of tar:* the residue is pitch. The best pitch is, however, said to be imported from Sweden and Norway. The use of pitch in the arts, particularly in ship-building, is very great.

Pitch is used occasionally in plasters, where considerable stimulation is required, but medical men very rarely order it in any shape.

Pitch plaster is made thus: Take of yellow resin six ounces; of yellow wax five ounces; of pitch seven ounces. Let them be melted together. This plaster is sometimes used for scald-head. See SCALD-HEAD.

Pitch, Burgundy. See BURGUNDY PITCH.

Pity. See COMPASSION.

PITYRIASIS, a cutaneous disease, appearing in irregular patches of small thin scales, which repeatedly form and separate, but never collected into crusts, nor are attended with redness or inflammation. A species of this disease, in infants, is called dandriff. See DANDRIFF. It affects also the heads of elderly persons, but the scales are much larger than in infants. There is another species of this complaint, called *pityriasis versiolor*, affecting chiefly the arms, breasts, and abdomen. It is dispersed very irregularly, and being of a different colour from the skin, it exhibits a singularly chequered appearance. It is not attended with any internal disorder, nor with any troublesome symptoms, except a little itching, or irritation, felt on getting into bed, or after strong exercise, or drinking warm liquors. It continues sometimes for years, nor is it limited to either age or sex. Its causes are not certainly known. It has been referred to eating large quantities of fruit, to mushrooms, and to exposure to sudden heat or cold; and it has been sometimes much aggravated, by wearing flannel next the skin; it is also often found in persons who have resided long in tropical climates. The cure consists chiefly in regular habits of cleanliness, and of living with an avoidance of excess of every kind. We can scarcely recommend any external application. What is said under leprosy is, however, deserving of attention in this complaint.

Placenta. See PARTURITION.

PLAGUE, or *pestis*, a typhous and contagious disease, distinguished by prostration of strength, buboes and carbuncles, petechiæ, hæmorrhage, and colliquative diarrhœa. It is now unknown in this country, although, in the year 1665, nearly 100,000 persons died of this destructive malady in the metropolis alone. It is always attended with imminent danger; but where those who labour under the disease are not deserted through fear, it is by no means so fatal as it otherwise becomes.

It sometimes happens, after taking the infection, that the patient experiences only a considerable degree of languor, and slight head-ach, for many days previous to a direct attack of the disease; but, more commonly, he is very soon seized with great loss of strength, anxiety, palpitations, fainting, stupor, giddiness, violent head-ach, and delirium, the pulse becoming at the same time very weak and irregular. These symptoms are shortly succeeded by nausea, and a vomiting of a dark bilious matter; and in the further progress of the disease, carbuncles make their appearance; buboes also arise in different glands, such as about the jaws, in the neck, the arm-pits, or the groin; discolouration of the skin, hæmorrhages, and debilitating diarrhœa ensue, denoting a putrid tendency in the whole mass of blood.

When the disease is unaccompanied with buboes, it runs its course more rapidly, and is more generally fatal than when accompanied with such inflammations. The earlier they appear, the milder, usually, is the disease. When they proceed kindly to suppuration, they always prove critical, and ensure the patient's recovery. A gentle perspiration, arising spontaneously, has also often proved critical. When carbuncles show a disposition to become gangrenous, the event will be fatal; petechiæ, hæmorrhages, and colliquative diarrhœa, denote the same termination.

Various means have been devised for the prevention of the plague; and as it can be introduced into Great Britain only from other countries, the utmost circumspection is required and adopted in performing quarantine, and in ventilating the suspected merchandize, before it is suffered to be warehoused. If, however, the plague should unfortunately break out in any particular family or place, those who are obliged to have any intercourse with the sick, must carefully avoid coming in contact with them, or with any article that has passed through their hands. Such, however, as attend on them should adopt the precautions as mentioned under **Contagion**; where, as well as under **Typhus**, will be found many observations deserving of attention in the prevention, as well as in the treatment of this disease. Intemperance must be, of course, avoided, and all the depressing passions, such as fear, &c.; the prudent use of wine and spirits, Peruvian bark, camphor, &c.; have been found useful preventives.

Various remedies have been recommended and used with different success, upon various occasions, and in different countries. Bleeding, gentle laxatives, and mild emetics, have been employed with advantage both in the earlier and advanced stages of the complaint. Camphor, sudorifics, particularly opiates, when combined with small portions of the neutral salts; the Peruvian bark, and acids, have all proved of great service.

A remedy which has also been strongly recommended is friction of the infected with warm olive-oil: as soon as the first symptoms are perceived, the patient is to be removed to a close room, and placed over the frame of a vessel containing hot coals, while the body is rubbed very briskly with a clean sponge dipped in warm olive-oil, in order to excite a profuse sweat. During this operation, sugar and juniper berries are advised to be burnt in the room, by which a thick smoke will be produced, that greatly promotes the effect. The friction with the oil should not exceed three or four minutes, as it will generally be followed by copious perspiration; but in the contrary case, the body must be wiped with a warm dry cloth; tepid drinks should also be administered; and the rubbing continued once every day, till favourable symptoms appear. In performing this operation, the greatest caution is necessary, to guard against taking cold: such parts of the body, therefore, as are not immediately under friction, must be covered, and the linen remain unchanged, till the perspiration has nearly subsided. These frictions will be most beneficial, if adopted in the early stages of the disease, although when used at a later period, they have often effected a cure. The quantity of oil employed at each friction, is usually about a pint. Its salutary effects are not confined to the person affected with the disease: for it is said, that those attendant on them, if rubbed with the oil, will be protected from infection.

If tumours arise, they ought to be frequently, but softly managed, till they become disposed to suppurate, by means of emollient plasters.

During the first four or five days, patients are directed to observe a very sparing diet; but it seems most probable, that in the latter stages of the disorder, food of a more stimulating kind is necessary. From the appaling nature of this malady, and the low state of medical knowledge in those countries where it most commonly happens, our knowledge of the proper method of treating it is still very imperfect.

The internal use of olive-oil has also been lately recommended: from four to eight ounces, are to be taken for a dose. It generally acts as a sudorific; and sometimes vomits and purges; but sweating is said to be most salutary,

The plague rages most violently in the summer; its effects are somewhat diminished in autumn, and during the winter it is greatly reduced, or totally suppressed. Almost all the countries bordering on the Mediterranean appear to be peculiarly liable to it.

Some enquiry has been lately excited in this country, relative to the real nature of the plague; and a committee of the House of Commons, a short time since, examined evidence upon it. Although many persons, some not medical, gave it as their decided opinion, that the plague was not a contagious disease; and although Dr. MACLEAN asserts, that in the whole circle of human opinion, there is not, perhaps, another individual error to be found that is productive of so much complicated mischief to mankind, as the doctrine which teaches that contagion is the cause of epidemic diseases; yet the college of physicians say, that although some epidemic diseases are not propagated by contagion, it is by no means proved, that the plague is not contagious: on the contrary, they are persuaded, from the experience of all ages, as well as from the personal observation of some of their own body, that the disease is communicable from one individual to another; and that the doctrine of contagion appears to be wholly unshaken by any argument which Dr. Maclean has advanced; at the same time, they think it probable, that some of the personal restrictions enforced on the establishment of quarantine, might be modified, without risk to the public safety. And the committee of the House of Commons say, that the opinions of all the medical men whom they examined, with the exception of two, are in favour of the received doctrine, that the plague is communicable by *contact only*, and different in that respect, from epidemic fever; nor did the committee see any thing in the rest of the evidence, to dissent from this opinion. See QUARANTINE.

Plaise. See FLAT-FISH.

PLANARIA, a genus of worms, having a flattish gelatinous body, and consisting of forty-seven species, either without eyes, with a single eye, with two eyes, with three, or with numerous eyes. They are all inhabitants of Europe, chiefly Denmark and Norway: two or three are met with in our own country. The *operculata*, resembling a coffee-berry, found on the sandy shores of Norway; the *subulata*, having a long body, found in Greenland; and the *quadrangularis*, found in the north of Europe, in ditches, among duck-weed, are all which we can enumerate.

PLANE, or *platanus*, a genus of plants, comprehending two species, as follow:

The *Orientalis*, or Oriental plane-tree, has leaves somewhat palmate, stem tall, erect, covered with a smooth bark, in the younger branches dark brown, inclining to a purple; flowers upon long peduncles, hanging downwards, each peduncle containing five or six balls of flowers, which are so small, as scarcely to be distinguished without glasses; they appear in the beginning of June, a little before the leaves; the seeds ripen late in autumn, and if left upon the trees, will remain till the spring, when the balls fall to pieces, and the seeds are transported to a great distance by the winds; a native of Asia, and flourishes extensively in the Levant: Three varieties: the Spanish plane-tree, having leaves tapering to the base, flat; middle plane-tree, with leaves tapering to the base, waved; and the maple plane-tree, with leaves transverse.

The *Occidentalis*, Western, or occidental plane, has lobe-angular leaves; stem very straight, of equal girt most part of its length; bark smooth, which it exfoliates annually; branches numerous; flowers still smaller than the former.

Both species are elegant and hardy; will bear the open plantations of our own country, and have a very ornamental effect. They may be increased by seeds, layers, or cuttings; the two last modes are the most common.

The wood of the last species is excellent for various articles of domestic furniture, especially for tables, having fine veins.

Plane, the mock. See MAPLE.

PLANT, in botany, an organic vegetable body, consisting of roots and other parts. It grows chiefly in the earth, but sometimes is attached to other bodies, such as walls, rocks, stones, &c. The constituent parts of a plant are, the roots, the stem, the branches, the bark, leaves, flowers, and seeds; which greatly vary, both in figure and size, &c. Plants are divided into orders, classes, genera, species, and varieties; see BOTANY, and also the various TREES, SHRUBS, FLOWERS, &c., throughout our work.

PLANT-LOUSE, PUCERON, VINE FRETTER, or *Aphis*, a genus of insects comprehending seventy-three species, uniformly deriving their specific name from the tree, shrub, or plant on which they are commonly found. These minute animals infest various plants, generally in large societies, obstructing their growth, and consuming their juices. They are sometimes winged, and sometimes wingless, without distinction of sex; in the spring it is said they are viviparous, producing young alive; in the autumn they are oviparous; one impregnation of the female is sufficient for many successive generations. The following are the only species which we can enumerate:

The *Salicis*, or Willow-louse, is found on different species of the tree thus named; length nearly a quarter of an inch; colour yellowish green, spotted with black. Towards the end of September multitudes of the full-grown insects, both winged and others, desert the willows, and roam at large over every neighbouring object, so that nothing can be handled without crushing some of them; while the younger ones still remain in masses on the trees.

The *Millefolia*, or Yarrow-louse, is a small species of a green colour, spotted with black. Males generally winged, and smaller and slenderer than the females.

The *Tiliæ*, or Lime-tree-louse, is one of the most beautiful of the genus; size small, like that of *rosæ;* colour greenish yellow, with various variegations.

The *Rosæ*, or Rose-louse, infests the young shoots and buds of roses, in the spring and summer months; size that of the willow-louse; colour bright green; the males furnished with long transparent wings.

Although it is stated in our books on natural history that the *aphis* is viviparous in the spring, and oviparous in the autumn, we incline to think that the statement originates in mistake. An attentive observer of this species will find the ova attached to the branches of the rose-tree, in lumps of a dark colour, during the winter; and towards the spring, as the heat of the weather advances, the young aphides are produced in myriads from these lumps, which crack, and frequently after the insects have escaped from them, remain attached to the bark like an empty shell. Such, at least, is our own experience on the rose-louse in Somersetshire. The best method, therefore, of destroying these animals, is to look over the trees in the spring, just before they are hatched, and crush them with the finger. Afterwards quick-lime slacked, and thrown upon the leaves, is the best, indeed we believe the only remedy. See BLIGHT.

The *Vitis*, or Common vine-fretter, is almost perpetually found in the summer months, on the *vitis vinifera*, or Grape vine. The body is greenish, back and abdomen brown; a brown dot between the antennæ. This destructive insect eats through the peduncles or stems which support the clusters of grapes, in their very early stage, causing them to wither away and drop off, soon after the fruit is formed.

PLANTAIN, or *Plantago*, a genus

of plants comprehending thirty-five species, scattered over the globe; five common to our country; most of them with a naked scape; a few furnished with a stem. The following are the indigenous plants: The *major*, or Broad-leaved plantain, with ovate leaves, nearly glabrous, shorter than the petiole; scape round; spike with imbricate flowers; seeds numerous; found wild in our meadows. The *media*, Hoary plantain, or lamb's tongue, has ovate pubescent leaves; common to our meadows. The *lanceolata*, Narrow-leaved plantain, or rib-wort, has the leaves lanceolate, tapering at both ends; often cultivated in the vales of Gloucestershire. The *maritima*, or Sea-plantain, with linear, mostly entire leaves, is found on our muddy shores. The *coronopus*, or Buck's horn plantain, has linear leaves, in many primate segments; foûnd on our dry heaths and sands; formerly cultivated as a salad, bût long relinquished on account of its disagreeable taste. It is said that the total absence of rib-wort, in marshy lands, is a certain criterion of their indifferent quality.

Some of the plantain tribe, such as the *psyllium*, or Flea-wort, a native of the south of Europe, the *major*, and the *lanceolata*, were formerly in our materia medicas, but are now deservedly forgotten.

PLANTAIN, the TREE, or *Musa*, a genus comprehending three species, as follow:

The *Paradisiaca*, or Plantain-tree, is an herbaceous tree, growing to the height of fifteen or twenty feet spontaneously, in many parts of India, but has been immemorially cultivated by the Indians in every part of the South American continent. The pomes are nearly of the size and shape of ordinary cucumbers, and when ripe of a pale yellow colour, of a mealy substance, a little clammy, a sweetish taste, and will dissolve in the mouth without chewing. The whole spike of fruit often weighs forty or fifty pounds. When they are brought to table by way of dessert, they are either raw, fried, or roasted; but if intended for bread, they are cut before they are ripe, and are then either roasted or boiled. The Indians make a liquor from this fruit called *mistaw*. The fruit, however, will not keep long after it is ripe, and therefore the pulp is made into cakes, and dried over a slow fire; when thus dried it may be made into mistaw at pleasure. The leaves of this tree being large, serve the Indians for table-cloths and napkins. In Jamaica this tree is largely cultivated, and truly useful. Wheaten flour is even said to be less palatable to the laborious Negro than the food afforded by this plant. It also serves to fatten horses, oxen, swine, poultry, and other domestic animals.

The *Sapientum*, or Banana-tree, has a nodding spadix; males deciduous; the stalks marked with dark purple stripes or spots; fruit shorter and rounder than the first, with a softer pulp of a still more delicious taste. It is never eaten green; but, when ripe, by all ranks of people, either raw, or fried in slices, or fritters. It is supposed to be a native of Guinea, and carried thence to the West Indies, where it flourishes most abundantly. It also flourishes in Egypt, and in other hot countries, where it grows to perfection in about ten months, from first planting to the ripening of the fruit. The trunk of the tree is peculiarly porous; the root alone is perennial, the rest dying down to the ground every autumn. When the stalks are cut down several suckers rise from the root, which, in six or eight months, produce fruit; and by cutting down the stalks at different times, a succession of fruit may be obtained throughout the year. The leaves are two yards long, and a foot broad in the middle. The fruit is four or five inches long, of the form of a cucumber. The weight of a bunch of bananas usually exceeds 12lbs. They may be propagated by suckers which shoot from the roots of plants that have fruited; and they may be made to grow in our own hot-houses, where there is room for them.

The *Troglodytarum* has the spathe and berry both scarlet, but the latter is not eatable; it is a native of the Molucca islands.

PLANTAIN, the WATER, or *Alisma*, a genus of plants comprising ten species, traced in different parts of Europe, Africa, and America; three of which are inhabitants of the swamps and pools of our own country. The only one worthy of note is the *plantago*, the root of which has been lately recommended for the bite of a mad dog. It grows either in marshes, lakes, or ponds, and continues under water till the month of June, at the commencement of which, from five to seven detached sprouts, of a long convex form, shoot from beneath the water; these sprouts have a reddish bark, and each has a pointed, smooth, and deep-coloured leaf. Soon afterwards a stalk appears with a round green root, resembling asparagus; this stalk shoots from beneath the water, sometimes with, and sometimes without leaves; it is divided into several sprigs, without leaves, at the extremity of each of which is a small trefoil flower, of a pale red colour. This plant is in blossom during the whole summer; the root is capillary, resembling an onion; the latter end of August is the proper time for gathering it; when it should be washed and dried in the shade, and when used it is to be eaten in powder, strewed upon bread and butter. See BITE OF A MAD DOG. We think it our duty to mention this medicine, but do not advise implicit reliance on it.

This plant grows in abundance on the banks of the Thames, above Vauxhall Gardens.

PLANTATION, a large collection of different sorts of trees, disposed for ornament, or grown for the advantage of their timber; and not unfrequently uniting both purposes. Under proper regulations, there are few better means of improving estates, and certainly none so essential towards an ornamental improvement of the country; hence plantations are particularly worthy of attention wherever there are large tracts of barren lands, which cannot be converted to purposes of grass or tillage.

Besides answering the purposes of natural wood, for all the important objects for which that substance is applicable, planting is perhaps the only improvement of which, in many cases, extensive tracts are susceptible. Several sorts of trees may also be thus introduced, which, though not indigenous, will, under proper management, thrive in any country. In this way, likewise, the climate is improved by the shelter thus obtained; and the beauty of the scenery is heightened by covering barren rocks and bleak heaths with the verdure of woods.

It is certainly a fortunate circumstance that, with the exception of very high mountains, there is scarcely any portion of land so poor, barren, rocky, or unproductive, as not to admit of this species of improvement, provided trees suited to the quality of the soil, and the nature of the climate, are selected, and the proper modes of treating them are adopted. But though there are inducements to plant, yet, unless in places where the demand is great, trees should not be reared in any quantity upon land which may be made subservient to agriculture, or productive pasture. Crops of grain, or herbage, will, in general, produce a much more expeditious and profitable return.

In forming a plantation the following points should be considered: the manner in which young plants ought to be raised;—the trees best calculated for the soil and situation; the manner in which they ought to be planted;—the expense of planting;—the mode of management;—and the probable profit.

Different opinions exist as to the method in which young plants ought to be raised, and from the frequent impossibility of rearing many kinds where they are ultimately to remain, many must be transplanted; but we can have no hesitation in asserting that, where the soil is suitable to the tree, the best method is that in which they are raised at once from seed, the poor or indifferent plants pulled out, and the best and most vigorous allowed to remain. Where the soil is thin and barren, more especially is this proceeding necessary; but if the soil be wet and pretty deep, it is esteemed much better to plant them. Young trees, it is said, should always be raised on good land, so as to carry a stock of health and strength with them from the nursery; and when they are to be transplanted to a similar soil, the doctrine is good, but we doubt exceedingly its truth when the tree is transplanted to a much poorer and indifferent one. It is a material object that the roots should have the means of growing without obstruction. In stiff heavy clays it is an advisable practice to trench the ground two spits deep, the year before it is planted; but light land requires no digging. The holes ought to be made 3½ feet wide, 18 inches deep, and 4½ feet asunder.

The trees which thrive best on *elevated lands* are the *larch*, the *Scotch fir*, the *mountain ash*, and the *birch*; in a medium elevation the *beech* may likewise be cultivated.

On the steep sides of hills, and banks of rivers, the *ash* and the *sycamore* are the most likely to prosper; and on the cold and boggy soils of the sides of hills, the *ash* and *willow* grow luxuriantly.

For low and moorish tracts the *birch*, the *alder*, and the *willow*, are well calculated; but there is reason to believe that the *pitch pine* of America, would surpass every other tree in such situations. The ash will also thrive well in such soils.

Swampy grounds or bogs may be rendered highly valuable if planted with willows or osiers; a statute acre will contain about 20,000 stock plants at eighteen inches distant from each other.

The difficulty of raising plantations on the sea coast is well known: the best trees for this purpose are the *pinaster*; the *Weymouth pine*; the *laburnum*; and the *Huntingdon willow*. The *quercus virens*, or lace oak, a native of the Southern states of North America, has also been recommended for such situations; the *plane*, or sycamore, the *tamarisca Gallica*, *tamarisca Germanica*, and the *flowering alder*, have also been mentioned. In some instances, sheltering the young plants till they have taken firm root, will, it is said, be sufficient to ensure their after-growth; but from extensive and accurate observation, we are convinced that in this climate, and particularly on the western shores of our island, very few trees of any kind can be made to grow without shelter, when planted near the sea-coast, on a level, or nearly so, with the sea itself.

Plantations on soils of rather a superior quality, ought to be made with the *oak*, the *ash*, the *Spanish chesnut*, and the *elm*. All these affording very valuable wood; the Spanish chesnut is said to be the best substitute for the oak. The ash is also valuable, but it is said to be particularly injurious in hedge-rows, to land under cultivation; and the leaves, if eaten by cows, communicate a bad taste to their milk.

There are various modes in which trees may be planted. Where the climate is bleak, and shelter is required, they ought to be planted in large masses. Belts of planting are also of great use: they should never be less than 50 or 60 yards in breadth. In some districts, small clumps are planted, which, if judiciously executed, are ornamental, and afford much shelter to a country bare of wood. Planting the corners of enclosed fields has also of late been much recommended. Planting the gardens of farmers and cottages is practised on some estates; but it is detrimental to the productions of the garden, and ought never to be attempted where fruit-trees will grow. Hedge-rows are highly ornamental; they give shelter, and in process of time, become timber; but unless properly managed, by judicious and high pruning, they ruin the hedge, injure the adjacent grounds, by their roots and shade, and, when planted on the sides of roads, do great injury by keeping them wet. Shade-trees, when judiciously planted in fields, are useful in hot weather, as a shade for cattle. The bird-cherry, the beech, the sycamore, and lime, are well calculated for such purpose; so also are the elm and the oak; but when standing singly, they spread very much, and render the grass under them very indifferent. Pollards can scarcely be considered ornamental; their chief use is for the growth of fuel in districts where it is scarce.

Plantations are often made in ground encumbered with stones or rocks, where no preparation can be made but pitting the ground for the plants; the pits should be dug five or six months before the young trees are planted. When it is practicable, it will be useful to trench or plough the ground before the trees are planted; and sometimes the cultivation of roots for two or three years afterwards is adopted.

Prejudices are entertained against the mixture of different trees in the same plantation; but it certainly contributes highly to ornament; and is often necessary to afford protection and shelter of the quicker growing and hardier trees, to those which are tenderer, and of slower growth.

In managing plantations, the object is to give at the same time, a due proportion of shelter and of air, and also to take care that those trees which are of the quickest growth, do not overrun and destroy those of slower growth, and of more value. It is said that the *spruce* for a nurse, is preferable to every other tree.

While the engrafting of fruit-trees has been found so advantageous, the same operation with forest-trees has been tried with success; and is certainly entitled to more attention than has hitherto been paid to it In planting it is also necessary to discriminate between the different species of the same tree: for it frequently happens, that two or three distinct species, which require different situations, as to climate, have occasionally been confounded in the same plantation.

The reader must not conclude, because we have not enumerated a great variety of trees, that none besides, are proper for plantations. We have only mentioned the most useful, but many others, an account of which will be found in various parts of our work, may be, and usually are, cultivated in plantations, either for ornament or utility. To these different articles we refer.

We cannot conclude this article without observing, that the oak must be always valuable, on account of its bark; but unless in the neighbourhood of large towns, of extensive manufactories, or water carriage, the estimates commonly made of the *profits* to be derived from plantations, are often exaggerated. At the same time, there is no mode by which very poor soils can be more advantageously occupied; and stony and rocky land, cannot be so profitably employed in any other way. The only objection is the length of time required to bring the timber to perfection; but this ought not to have much weight, as the benefit must either accrue to the planter or his heirs.

PLANTING, the operation of inserting plants, seeds, and roots into the earth, for the purpose of vegetation, and future growth.

The first thing in planting is to prepare the ground, before the trees or plants are taken out of the earth, that they may remain out of the ground as short a time as possible; and the next is to take up the trees or plants, in order to their being transplanted. In taking up the trees, carefully dig away the earth round the roots, so as to come at their several parts, to cut them off: for if they are torn out of the ground without care, the tree will be materially injured in its future growth. When the tree is taken up, all the small fibrous roots must be cut off, as near to the place whence they are produced as may be, except it is to be replanted immediately after it is taken up; all the bruised or broken roots, must also be pruned off, as well as all such as are irregular, and cross each other, and all downright shoots, especially of fruit-trees. The large roots must also be shortened in proportion to the strength and nature of the tree, observing, that the walnut, mulberry, and other tender-rooted kinds, should not be pruned so close as the more hardy sorts of fruit and forest-trees. In young fruit-trees, which are one year old, from the time of grafting, the roots may be left only about nine inches long; in older trees, a much greater length; but this must be understood of the larger roots: the small ones must be chiefly cut quite out, or pruned very short.

The heads of the trees must be also pruned. If they are designed for walls or espaliers, it is best to plant them with the greater part of their heads, which should remain on till they begin to shoot in the spring, when they must be cut down to five or six eyes, at the same time, taking care not to disturb the roots. If the trees are designed for standards, the small branches must be pruned close to the place where they are produced, and also the irregular ones, which cross each other; the branches also which have been by accident broken or wounded, must be cut off; but by no means cut off the main leading shoots.

Previously to planting the tree, if it have been long out of the ground, so that the fibres of the roots are dried, they should be placed in water for eight or ten hours, with the head of the tree erect. If the soil be cold and moist, the tree should be planted very shallow; and if it be on a hard rock or gravel, it will be better to raise a hill of earth where each tree is to be planted, than to dig into the rock or gravel. The tree should also be planted about the same depth in the ground as it was before it was taken up. The earth must also be broken in pieces, and scattered into the hole so that it may fall between every root, that there may be no hollowness in the earth. Having filled the hole, the earth should be gently trodden down with the feet, but not too hard. The tree is then to be secured by stakes driven into the ground, to prevent its being displaced by the wind; some mulch should also be laid upon the surface of the ground about the roots. Those planted against a wall, should be placed five or six inches or more from the wall, to which their heads should be nailed to keep them steady.

The time for transplanting trees is various, depending upon the kind of tree, situation, &c.: For the trees whose leaves fall off in winter, and which have ceased to grow for the season, the beginning of October is the best time, provided the soil be dry; but if wet, it may be better to defer it till the latter end of February, or beginning of March. For many kind of evergreens, April is a good season; but laurels and cypresses, often do best by being transplanted in October or November; many evergreens, as well as other trees, may, however, be transplanted even at Midsummer, provided they are not carried far, and are afterwards well watered; but at such times a cloudy wet season should be chosen. Upon the whole, the best period for transplanting trees, generally, is from November to February, both these named months included, but never during frost.

PLASHING, a term used by farmers, to express the operation of cutting, laying down, and interweaving hedges, so as to promote their growth, and at the same time to produce the best fence. It is performed at any time during the winter months: February is, generally, considered the best season.

PLASTER, in pharmacy, a preparation of a hard consistence, composed of various ingredients, and, when warmed, spread on leather, &c. and applied externally, to wounds, ulcers, &c.

The following are the most useful plasters.

Ammoniac plaster. Take of purified ammoniac, five ounces; of distilled vinegar half a pint. Dissolve the ammoniac in the vinegar, then evaporate the solution in an iron vessel placed in a water bath, constantly stirring till it acquire a proper consistence.

Blister plaster. See BLISTER.

Court plaster. Dissolve the best isinglass, previously cut in small pieces, in proof spirits, so as to obtain a strong viscid solution; then take any kind of silk, and spread the liquor uniformly over it with a soft brush; when the first coat is perfectly dry, repeat this application a second and a third time. Some add a solution of Peruvian balsam, in rectified spirits for the last coat; but this does not appear by any means necessary.

Plaster of frankincense, formerly called *strengthening plaster.* Take of lead plaster eight ounces; of frankincense three ounces; of red oxide of iron one ounce. To the plaster and frankincense melted together, add the oxide of iron, stirring them so as form a plaster. This plaster was formerly made with *dragon's blood* in powder, instead of the oxide of iron: But neither of these colouring matters are of much importance in the plaster.

Compound galbanum plaster, commonly called *gum plaster,* or *Paracelsus*: Take of purified galbanum three ounces, of plaster of lead one pound; of common turpentine four drachms; resin of the spruce fir (frankincense) powdered one ounce. Having melted the galbanum and the turpentine together, mix in first the resin, and then the plaster of lead, previously melted by a slow fire, and mix the whole together.

Lead plaster. Take of litharge in powder, seven ounces and a half; of olive-oil one pint: water four ounces. Boil these together over a slow fire, stirring constantly, until the oil and litharge unite, and become of the consistence of a plaster. It will be necessary to add a little hot water from time to time during the boiling, in order to supply the loss of that which escapes, and to keep the heat moderate. This the common *diachylon* plaster of the shops.

Mercurial plaster. Take of purified mercury three ounces; of sulphuretted oil one fluidrachm; of lead plaster, one pound. Rub the mercury with sulphuretted oil until the globules disappear; then add by degrees, the lead plaster melted, and mix the whole.

Compound pitch plaster. Take of Burgundy pitch half a pound; of frankincense four ounces; of yellow resin and yellow wax, of each one ounce; expressed oil of nutmeg two drachms. To the pitch resin and wax melted together, add first the frankincense, then the oil of nutmeg, and mix the whole. This, except in the addition of the oil of nutmeg; is of similar composition to the plaster known in the shops under the name of *oxycroceum*: the darkness of the colour of this last is caused by the use of *common* instead of Burgundy pitch.

Resin plaster. Take of yellow resin three ounces; of lead plaster one pound. Melt the lead plaster by a gentle heat, then add the resin in powder and mix.

Ammoniac plaster is stimulant and resolvent. It is applied to scrofulous tumours, and white swellings; and sometimes to scald heads. *Court plaster* is a very useful application to chaps on various parts of the body, merely by preventing the access of air. *Plaster of frankincense* is supposed to be tonic; and is used in muscular relaxations, and weaknesses of the joints after sprains; it acts most probably, by affording a mechanical support to the parts. *Compound galbanum plaster,* is stimulant and suppurative; it is applied to scrofulous tumours, to joints long affected with gouty pains, and to the loins in rickets; it is also applied to indolent tumours, and to reduce the indurations which often remain around abscesses and boils, after they have discharged. The *Lead plaster* is used chiefly to defend excoriated surfaces from the air, and for other plasters. *Mercurial plaster,* is applied to buboes, venereal tumours, and nodes, when they are not very painful to the touch; and to indurations; it is also applied to the joints, when affected with obstinate syphilitic pains. *Compound pitch plaster* is stimulant and rubefacient. It is used in catarrh, and other pulmonary affections, applied to the throat; and in head-ach and chronic opthalmia, applied to the temples. When a serous exudation takes place, the plaster should be frequently renewed.

The *Resin plaster,* or, as it is more commonly called, *sticking plaster,* is defensive, adhesive, and gently stimulant. Spread on calico, it is used for retaining together the lips of recent wounds; to give support to ulcerated parts; and to assist their granulation and cicatriration, according to the excellent method of Mr. **Baynton**. See **Ulcer**. It is used also for the same purposes as the lead plaster, the addition of the resin causing it more effectually to stick.

PLASTER OF PARIS, a kind of white powder, formerly obtained from Paris; it is made thus: Take any of the alabasters, break them into small lumps, and submit them to the heat of an oven of about the same temperature as that for baking bread, and also for about the same period which bread takes to be perfectly baked. It may, when cold, be reduced to powder, and is then fit for use. Or, which is, perhaps, a more easy and elegant method, reduce the alabaster to a fine powder, either in a stone-mill or other suitable apparatus, and boil it in an iron pot, over a fire, as long as it continues to yield bubbles. In both these cases it is most probably the water of crystallization only which is given off; the sulphate of lime remaining undecomposed.

On mixing plaster of Paris with water it becomes of a hard consistence almost instantaneously, hence its use in casting statues, forming the cornices and other figures on ceilings, &c. &c. See **Alabaster** and **Gypsum**.

PLATING is the art of covering baser metals with a thin plate of silver, either for use or ornament.

There are various processes of plating; one consists in previously preparing such articles as candlesticks, &c., with pummice stone, laying on leaf silver, and exposing them afterwards to the heat of a stove. Another is, to fasten plates of silver upon thicker plates of copper, and then rolling them together into thin plates. The copper is twelve times thicker than the silver, and one ounce of silver is rolled to a surface of three or more feet. The plates being thus made they are then stamped by a single stroke into the size and form of buckles, buttons, spoons, &c.

To the use of plated utensils for ornament there can be no objection; but plated *copper*, for spoons in particular, is exceedingly injurious, as the silver soon wears off, and the copper not only communicates a disagreeable taste to the food, but is liable to be dissolved by many kinds of aliment, and if taken into the stomach may be productive of very disagreeable, if not fatal consequences. If plated spoons be used, they should be those the substance of which is steel or iron.

PLATINUM, or **Platina**, a precious white metal, extremely difficult of fusion, and unaltered by the joint action of heat and air. Its specific gravity is 21.5, of course it is the heaviest known metal. It is very ductile, malleable, and tenacious. It is also an excellent conductor of heat.

This metal is found in small grains in South America, confined to alluvial strata in New Granada. These grains, besides platinum, contain generally gold, iron, lead, palladium, rhodium, iridium and osmium. The pure metal may be obtained by dissolving crude platinum in nitro-muriatic acid, and precipitating by a solution of muriate of ammonia. This first precipitate is dissolved in nitro-muriatic acid, and again precipitated as before. The second precipitate is heated while hot, and pure platinum remains.

The alloys of this metal with steel, from some experiments lately made by Messrs. **Stodart** and **Faraday**, at the Royal Institution, promise to be of use in the arts. A combination of 7 parts of platinum, 16 of copper, and 1 of zinc, much resembles gold.

Although platinum is occasionally used in some chemical and galvanic experiments, it is yet, comparatively, very little known.

PLATYPUS, a singular quadruped having a mouth shaped like a duck, with palmate feet; one species only, the *anatinus*, or Duck-billed platypus; it is a native of New Holland. Of all the mammalia this is the most extraordinary in its conformation; exhibiting the perfect resemblance of the beak of a duck, engrafted on the head of a quadruped. So accurate is the similitude, that at first view it excites the idea of some deceptive preparation by artificial means: it has the very epidermis, proportion, serrature, manner of opening, and other particulars of the beak of a shoveller, or other broad-billed species of duck; nor is it without the most rigid examination that we can persuade ourselves it is the real beak or snout of a quadruped.

The body is depressed, and has some resemblance to an otter in miniature; it is covered with a very thick, soft, and beaver-like fur, moderately dark brown above, and a sub-ferruginous white beneath. Tail about three inches long, flat, and furry like the body; legs very short, terminating in a broad web, which, on the fore-feet, extends to a considerable distance beyond the claws; but on the hind feet reaches no further than the roots of the claws; claws on the fore-feet five, straight, strong, sharp-pointed; on the hind feet six, longer and more curved: teeth none; eyes indistinct, imbedded in fur. The length of the whole animal, from the tip of the beak to that of the tail, is thirteen inches; of the beak an inch and a half.

PLEASURE has been defined delight, gratification of the mind or senses. But these definitions rather refer to pleasure in excess than to the ideas which morally and philosophically belong to this generic term. All our actions, whether corporeal or mental, appear to arise from sensations or perceptions of pleasure or of pain. We give these sensations and perceptions, it is true, different terms: thus the pain or uneasiness arising from the absence of a proper quantity of food in the stomach we call hunger; the pleasure derived from the company of, or attachment to, beloved friends, affection, &c.; but these, and all other sensations and affections, will be found, nevertheless, referable to one of these orders, that is, either to pleasure or to pain.

These pleasures and pains, at the same time that they are the causes of our actions, are not less wonderful than sometimes mysterious in their operation. With what suddenness do they not pass from one to the other; and in different persons how often does the same cause produce exquisite pleasure to one, and to another exquisite pain! more especially in our mental and moral operations is this found to be the case.

Some of both our corporeal and mental pleasures, as well as pains, are more immediately under our control than others; and it is possible, by discipline, to increase our disposition or capacity for receiving a variety of pleasures and pains, which, to the uninformed and ignorant, must remain totally unknown. In a right culture of such dispositions, in order to produce the greatest quantity of happiness of which our being is capable, does the proper business of education consist. Excessive pleasure, as well as excessive pain, are often more or less injurious to our moral and physical well being, and are both equally and as much as possible, to be avoided. See EDUCATION, HAPPINESS, MIND, and SYMPATHY.

PLEASURE-GROUND, in ornamental gardening, the ground surrounding a mansion or other residence, and comprehending all the embellished compartments and divisions of ground and plantation, such as lawns, plantations of trees and shrubs, flower compartments, walks, pieces of water, &c., whether situated wholly within the space generally considered as proper pleasure ground, or extended over ha-has, or sunk fences, or by other communications, to the adjacent fields, parks, paddocks, or out-grounds.

In laying out pleasure grounds, the general intention must be to unite the diversified beauties of art and nature. If the surface be marked with inequalities and irregularities so much the better; care being taken that the natural forms are humoured, and slightly smoothed where ruggedness would be inappropriate; in other cases, such ruggedness and prominences may be very often increased with much picturesque effect. The great point of attention, however, is to take care that the whole range of the prospect is not introduced at one view; and to give every object, and especially every distant object, a perpetual change, and novelty of shape and impression, by disclosing them in different attitudes, or under different aspects.

It is impossible to lay down any precise rules upon this subject; but good taste uniformly rejects all straight lines and right-angled turnings; whereas wavy undulations are in constant request: much, however, will depend upon the taste and genius of the designer to make the most of any given spot. See GARDENING and GROVE.

One of our great poets, MILTON, has happily described such scenery, although upon a larger scale than that in which we usually contemplate it.

Southward through Eden went a river large,
Nor changed his course; but through the shaggy hill
Pass'd underneath ingulf'd;—through veins
Of porous earth, with kindly thirst updrawn,
Rose a fresh fountain, and, with many a rill,
Watered the garden; thence, united, fell
Down the steep glade.
—From that saphir fount, the crisped brooks,
Rolling on orient pearl and sands of gold,
With mazy error, under pendent shades,
Ran nectar, visiting each plant, and fed
Flowers worthy of Paradise, which not nice art,
In beds and curious knots, but nature boon
Pour'd forth profuse on hill, and dale, and plain,
Both where the morning sun first warmly smote
The open field, and where the unpierced shade
Imbrown'd the noontide bowers. ———
A happy rural seat of various view:
Groves, whose rich trees waft odorous gums and balm;
Others, whose fruit, burnish'd with golden rind,
Hung amiable, and of delicious taste!
Betwixt them lawns, or level downs, and flocks
Grazing the tender herb, were interposed;
Or palmy hillock, or the flowery lap
Of some irriguous valley spread her store;
Flowers of all hue, and without thorn the rose.
Another side, umbrageous grots, and caves
Of cool recess, o'er which the mantling vine
Lays forth her purple grapes, and gently creeps
Luxuriant. Meanwhile murmuring waters fall
Down the slope hills, dispers'd, or in a lake,
(That to the fringed bank with myrtle crown'd,
Her crystal mirror holds) unite their streams.
The birds their choir apply: airs, vernal airs,
Breathing the smell of field and grove, attune
The trembling leaves, while universal Pan,
Knit with the Graces and the Hours in dance,
Led on the eternal spring.
PAR. LOST. BOOK IV.

PLETHORA, an excessive fulness of the vessels, or a redundance of blood.

PLEURA, a smooth and glistening membrane, which every where lines the internal surface of the thorax, and covers its viscera. It forms also the mediastinum. (See MEDIASTINUM.) Its use is to render the surface of the thorax moist, by the vapour it exhales.

PLEURISY, or *Pleuritis*, an inflammation of the pleura. It comes on with an acute pain in the side, which is much increased by making a full inspiration, and is accompanied by flushing in the face, increased heat over the whole body, rigors, difficulty of lying on the side affected, together with a cough and nausea; the pulse is hard, strong, and frequent, and vibrates under the finger when pressed upon, not unlike the tense string of a musical instrument. If blood be drawn, and allowed to stand for a short time, it exhibits a thick, sizy, or buffy coat on its surface.

The causes and cure of this complaint are treated of under the article LUNGS, which see.

PLICA POLONICA, a disease peculiar to Poland and Tartary, in which the hairs of the head become long, coarse, and matted and glued into inextricable tangles, accompanied with blood-vessels running from the head into the ends of the hair; sometimes hanging from the head more than an ell in length. It is a loathsome and odious disease, for which there is said to be no cure.

PLOUGH, in agriculture, a machine for breaking or turning up the soil by the draught of cattle, and which, in general, consists of a train or carriage furnished with two large irons, the one being pointed, while the other has a sharp edge, which serve both to cut or open, and also to draw furrows in the land.

In the formation of ploughs there is a great difference; and, indeed, they vary in almost every county, according to the nature of the soil, and other circumstances. But the great distinction necessary to be adverted to here is, between the *swing* and the *wheel* plough.

The advantages of the swing, compared to the wheel-plough are, that its original cost is less; that it is more easily kept in repair;—that it is less liable to friction;—that when properly made it requires less strength to draw it;—that it is not easily put out of order;—that it is peculiarly well calculated for light soils;—and that when the land is at all wet, it is not liable to be clogged.

These observations, however, apply to swing-ploughs made on a light and ingenious construction, and not to those used in Middlesex and other districts, which are of so clumsy and heavy a form as to require the draught of one or even two additional horses. It is at the same time to be remembered, in regard to swing-ploughs, that they require experienced labourers. But where these can be had, a swing-plough, with a pair of horses abreast, is a most efficient implement. Whether it will work any land, at all seasons, is a subject of much dispute.

The advantages of wheel-ploughs are, that they require less skill in the ploughman;—that they keep a more regular depth, and will turn a more shallow furrow;—that they afford assistance to the ploughmen in soils of a stubborn, adhesive, or stony quality;—and that they are better calculated for trench-ploughing. But, on the other hand, they are more expensive to purchase and repair;—they are liable to be put out of order;—they require more strength to work them;—they are more easily disturbed by inequalities on the surface;—they encourage the workmen to rest a part of their weight on the handles of the plough, by which the draught and friction are so much increased, that both the horses and the plough wear out much sooner; and neither good mechanics, nor able ploughmen, can ever become numerous, while their ignorance or their unskilfulness can be so easily remedied as by adding wheels to the plough. Hence, in various places, where experienced ploughmen can be had, wheel-ploughs have been given up, as expensive and cumbersome. Wheels, however, are found to be useful in cases where either the trench or the double-furrow plough is employed.

By the *trench-plough* two or more slices are taken with the same instrument. The first cuts off the weeds and stubble, and deposits them at the bottom of the furrow; the second slice is turned over the former, and completely covers it. This process suits only rather deep soils. The plough by which this process is effected, ought always to be furnished with wheels, in order that the deepness of the slice or furrow may be properly regulated.

Double-furrow ploughs are recommended from high authority, as saving the attendance of one person, and doing nearly double the work in the same space of time, with little additional strength in the team. They seem to be well calculated for level land free from stones; or where the soil has been previously well reduced by other ploughs; but they are less fit for general use than single ploughs.

The *paring-ploughs,* which have been long used in the fens instead of a coulter, have what is called a *scaife*, or circular plate of iron, turning constantly round, the edges of which are steeled, and kept sharp for cutting the turf.

Swing-ploughs, on the whole, are greatly preferable for general purposes. The Rotherham, or Yorkshire plough, with rather a *straight mould-board,* was the first light swing-plough for two horses that was used in this country. It was thence introduced into Suffolk, and other English counties. A plough with a *curved mould-board,* improved from the old Scotch plough, by **SMALL**, came into general use in Scotland. Some alterations on it have been suggested by **JAMES VEITCH**, an ingenious mechanic near Jedburgh. The swing-plough, constructed by the celebrated **ARBUTHNOT**, in Surrey, has been recommended by the most respectable authority; and now, indeed, in almost every part of the kingdom, swing-ploughs can be procured of an improved form.

The *mole-plough* is an instrument invented by Mr. ADAM SCOTT, for the purpose of draining land. It is of use where there is a regular stratum of clay or stiff marl; but not in loose or mixed soils. With wheels it requires a team of six horses, without wheels from ten to twelve. It is sometimes worked, with a peculiar apparatus, by manual labour, but never can become generally useful, until a *moderate power*, whether of man or horses, is sufficient for its use.

Ploughing. See HUSBANDRY.

PLOVER, or *Charadrius*, a genus of birds, comprehending thirty-three species, chiefly inhabitants of Europe and America, of which some are gregarious, and some solitary. They have a roundish, obtuse, straight bill; nostrils linear; feet three-toed, formed for running. The following are the chief:

The *Hiaticula*, or Ringed plover, has the breast black; front blackish, with a white band; crown brown; legs yellow; bill, upper half orange, lower black; eggs bluish white, with purplish spots; inhabits Europe and America; frequents the shores of England early in spring, and migrates in autumn. Another variety found in Spain, of a grey colour: a third variety in America, of an ash-grey.

The *Morinellus*, or Dotterel, has the breast ferruginous; band over the eyes, and line on the breast, white; legs black: another variety with considerable variegation in its colours; inhabits Europe; from nine to ten inches long: proverbial for its stupidity.

The *Pluvialis*, or Golden plover, has the body blackish, spotted with yellowish green; beneath whitish; legs blackish; inhabits almost every where in England, during winter, on heaths and moors, and a common object of sport. Breeds on unfrequented mountains, and makes a whistling noise; eggs dirty white, spotted with purple. Another variety with body blackish, varied with yellowish; beneath white; found in St. Domingo. Flesh good.

The *Calidus*, Sanderling, or Curwillet, has the bill and legs black; rump greyish; body beneath, white without spots. Another variety cinereous, varied with brown. Inhabits the sandy shores of Europe and America.

Plover, the bastard. See LAPWING.

PLUM, PLUM-TREE, or *Prunus*, a genus of trees consisting of thirty-one species, natives of Europe, Asia, and America, six of our own country. The following are the chief:

The *Domestica*, or Common plum-tree, grows wild in our hedges, with peduncles mostly solitary; leaves lance-ovate. It gives birth to all the rich variety of our cultivated plum-trees, of which there are some hundreds.

The *Insititia*, or Bullace-tree, has peduncles in pairs; leaves lance-ovate common to our hedges; from twelve to fifteen feet high; it varies with black and white, or rather wax-coloured fruit; and also with a red, bitter, unpleasant fruit.

The *Spinosa*, Black-thorn, or sloe-tree, with solitary peduncles, leaves elliptic, lanceolate; fruit small, black; branches spinous; found also in our hedges and woods, and often usefully employed for fences.

The *Armeniaca*, or Apricot. See APRICOT.

The *Cerasus*, or Common cherry-tree. See CHERRY.

The *Lauro-cerasus*, or Cherry-laurel. See LAUREL the CHERRY.

The *Avium*, or Small-fruited cherry-tree, in some counties called merries, often grows to a large size, and is found wild in our woods: two or three varieties.

The *Padus*, or Common bird cherry-tree, is found also in our woods, rising to the height of ten or twelve feet; sometimes called the cluster cherry-tree.

The *Rubra*, or Cornish bird cherry-tree, grows more than twenty feet high; fruit larger than the last, and red when ripe; found wild in Armenia.

The *Virginiana*, or Common American bird cherry-tree, rises with a thick stem from ten to thirty feet high; fruit larger than the preceding, black when ripe, and greedily devoured by birds.

Wood beautifully veined with black and white, and bears a good polish. A native of Virginia and other parts of North America.

The *Canadensis,* or Canadian bird cherry-tree, has leaves slightly serrate, green on both sides; a native of North America.

The *Mahaleb,* or Perfumed cherry-tree, being called sometimes rock-cherry, is a low crooked tree; fruit black, containing a bitter purple juice, which yields permanent stains; the wood is red, hard, and sweet scented; a native of Austria.

The *Caroliniana,* or Ever-green bird-cherry, is a shrub, a native of South Carolina,

The *Lusitanica,* or Portugal-laurel, rises twenty feet high; leaves bright ever-green; flowers white, long, in bunches; berries oval, at first green, then red: and when ripe very dark purple; it flowers in June, and is one of the most beautiful shrubs which we possess: a native of Portugal.

Plums are all propagated by budding or grafting upon stocks of the stoutest or wildest sorts, and these are usually and best obtained by suckers. Budding is esteemed the best method. The tree should be no more than one year's growth from the bud when transplanted. But if it be desired to have them bear fruit soon, grafting upon full-grown and healthy, but not old plum-trees, is a better method. If the tree be meant for walls, the whole management will be the same as that for peaches. Should the walls be low, they must be placed thirty feet apart; if high, twenty; an east or south-east aspect is to be preferred; but a western, or even a northern aspect, will often answer for many kinds of plums extremely well.

As espaliers or standards, plums succeed very well, but the fruit is not usually so rich as on those grown against walls. It is a common error to be too free with the knife in winter pruning; the plum, perhaps, upon the whole, requires less pruning than most fruit-trees. The soil for plums should neither be very moist nor very dry.

We cannot enumerate the many valuable garden plums; the chief, however, are the red and white magnum bonum, green gage, blue gage, Orleans plum, various damsons, the muscle-plum, the Fotheringham plum, the white Perdrigon, the apricot-plum, the roch-courbon, &c. &c.

Of the cherry-laurel, there are several sorts cultivated in the gardens about London; they are all propagated by sowing the berries, or by laying down the tender branches, which will take root in one year's time, and may be then transplanted into beds for a year or two, or even placed at once where they are to remain. If from seeds, they must be gathered when ripe, which is in January, and kept in dry sand till the beginning of March, when they must be sown in a bed of rich dry earth, well sheltered from the north and east winds.

Plums form an occasional and agreeable variety of the summer fruits; but they are less wholesome than many others; and should be entirely avoided by the valetudinarian and dyspeptic, as they are very productive of flatulence and other unpleasant consequences.

In a dried state they are called *prunes.* Three kinds of these are met with in the shops: the *Brignolensia,* or Brignole plum, brought from Brignole in Provence; it is of a reddish yellow colour, and has a grateful sweet sub-acid taste;—the *Gallica,* or common French prune;—and the *damascena,* or Damson. These are all of similar qualities; but the French prune is that generally used medicinally. It is an ingredient in the *confection of senna*; and, simply boiled, it may be sometimes advantageously given to children who are habitually costive. But it is, nevertheless, a medicament that we cannot much recommend.

PLUM, the American, Cocoa-plum, or *chrysobalanus,* in botany, a genus consisting of one species only, a native of America; it is shrubby and reaching to the height of nine or ten feet; the flowers are white, and the plums are damson-form, of a luscious taste, and much relished by the natives.

Plum, the date. See **Palm.**

PLUM, the **Jamaica,** or *spondias*, in botany, a genus comprehending four species, trees of the East or West Indies. The *mombin*, purple hog-plum, or Spanish plum, rising to the height of ten or twelve feet, with axillary purple flowers, is cultivated: a variety called leather-coat, from the appearance of the skin.

Plum, the persimon. See **Palm.**

Plumbago. See **Black lead.**

PLUMBERY, the art of casting and working lead, and using it in building. As this metal soon melts, and with little heat, it is easy to cast it into figures of any kind, by running it into moulds of brass, clay, plaster, &c. The chief articles, however, in plumbery are, sheets and pipes of lead.

Sheet lead is of two kinds, *cast* and *milled*. The cast lead is used for covering the flat roofs of terraces, buildings, gutters, lining reservoirs, &c. It is technically divided into 5, 5½, 6, 6½, 7, 7½, 8, and 8½lbs.; by which is understood that every *foot* superficial, of such cast lead, contains these several weights of metal in each foot respectively.

A proper vessel is provided, and fixed in masonry, in order to melt the pigs of lead, from which the sheets are usually cast. The casting table is generally in the form of a parallelogram, varying in size, from six feet in width, to eighteen or more in length. It is raised from the ground as high as to be about six or seven inches below the top of the vessel which contains the melted metal, and stands on strongly-framed legs, so as to be very steady and firm. The top of the table is lined by deal boarding, and has a rim projecting upwards, four or five inches, all round it. At the end of the table, near to the melted metal, is adapted a box, equal in length to the width of the table; at the bottom of this is made a horizontal slit, from which the metal is to issue, when it is to be cast into sheets. This box moves upon rollers, along the edges of the projecting rim of the table, and is set in motion by ropes and pullies fixed to beams over the table. The bottom of the table is then covered with a stratum of dry and clean sand, made regularly smooth. The box, which is made sufficiently large to contain lead enough to cast the whole sheet, and the slit is adjusted so as to let out as much, and no more, during its progress along the table, as will be sufficient to cover it completely, of the thickness and weight per foot required, is filled with the melted lead, and the operation of casting performed. The lead is suffered to cool, when it is rolled up, and other sheets are made, till the melted lead is all used.

Milled lead is cast and prepared at the ore and roasting furnace. It is commonly very thin, usually about four pounds of metal to the foot. In making it, a roller or a flatting-mill is used, whence its name.

Pipes are cast in a mill, with arms or levers to turn it. The moulds are of hollow brass. Large pipes of sheet lead are made by wrapping the lead on wooden cylinders, and soldering the edges.

Solder is used for securing the joints of lead-work. It should always be easier of fusion than the metal intended to be soldered by it. The best is composed of equal parts of tin and lead, melted together; for common purposes, a mixture of pewter and lead is more commonly used. The iron used for soldering is called a grozing-iron.

In casting thin sheets of lead, the mould is covered with a piece of woollen stuff, nailed down at the two ends; and a very fine linen cloth is laid over this. In casting, great regard must be had to a just degree of heat, so that the lead may run well, and not burn the linen; if paper take fire in the liquid lead, it is too hot; if it be not shrunk, and scorched a little, it is not hot enough.

In China, thin sheets of lead are made by having two large stones, accurately fitted to each other, with smooth surfaces; the upper one is raised, the melted lead poured on the lower one, and the upper one let fall, by which means a thin irregular plate is formed, which is afterwards cut into a proper shape.

For the diseases to which plumbers are peculiarly liable, See **Lead.**

PLUMERIA, a genus of plants, comprising four species, natives of the West Indies or America. The *rubra*, Red plumeria, or jasmine, is a milky succulent shrub, with clustered terminal flowers, of a pale red colour ;—the *alba*, or White plumeria, with flowers of considerable fragrance ;—the *obtuse*, or Black-leaved plumeria ;—and the *pudica*, or Close-flowered plumeria, with yellow flowers, of an exquisite odour. All these are cultivated, and may be increased by seeds or cuttings ; but require, except in the warmer months, the aid of a green-house.

PLUVIAMETER, a machine or apparatus, by which the quantity of rain that falls in any given place is measured. These instruments are variously constructed ; one, used by Mr. Luke Howard, of Plaistow, has been mentioned as being well calculated to answer the purpose for which it is designed.

Pneumatic apparatus. See Gas.

PNEUMATICS, that science which treats of the different properties of air and other elastic fluids. See Air, Carburetted Hydrogen, Gas, Oxygen, &c.

Pneumonia. See Lungs and Pleurisy.

Podagra. See Gout.

POE-BIRD, or Kogo, an inhabitant of some of the South Sea islands, and held in great esteem and veneration by the natives. It does not appear to have been as yet determined whether it be a distinct genus or a species of some known genus It is somewhat less than our blackbird ; the feathers are a fine mazarine blue, except those of the neck, which are a most beautiful silver grey. Under its throat hang two little tufts of curled snow-white feathers, called its *poies*, the Otaheitan word for ear-rings, whence its name. It is remarkable for the sweetness of its note, as well as the beauty of its plumage. Its flesh is delicate food.

POETRY, the language of passion, or of enlivened imagination, formed most commonly into regular numbers. The historian, the orator, the philosopher, address themselves, for the most part, primarily to the understanding : their direct aim is to inform, to persuade, or to instruct. But the primary aim of the poet is to please and to move ; and, therefore, it is to the imagination and the passions that he speaks. He may, and he ought to have it in his view, to instruct and to reform ; but it is indirectly, and by pleasing and moving, that he accomplishes this end. This definition of poetry is from Dr. Blair, and it contains, we presume, the sentiments commonly entertained relative to this delightful and enchanting art. The moralist can, however, by no means assent to it. The licentiousness of poets, like the licentiousness of novel-writers, requires a continual check. No poetry, however glowing, however impassioned, however moving, can be good, nor ought the publication of it to be encouraged, which pourtrays vice triumphant, and injustice and folly victorious. How many of the *national* poems of the civilized world, which have obtained different degrees of celebrity, ought never to have been written, we leave others to determine. Poetry may, nevertheless, be made a great moral engine ; it may be made to fill the heart

With loftiest being and the purest themes :
To soothe, to teach, and elevate the soul;

and, therefore, when it adds dignity to virtue, and confidence to truth, the perusal of poetry may be safely entrusted to the young mind. But when it displays the hero, or the conqueror, in the false glitter of glory ; when it inculcates sentiments in direct opposition to those of universal benevolence and love ; when it excites any of the malignant passions, whether ambition misdirected, hatred, or revenge, it is assuredly mischievous, and should never be encouraged. See Novels.

POET'S CASSIA, or *Osyris*, a genus of plants consisting of two species, one the *alba*, with linear leaves, and calyx and corol yellow ; a native of the south of Europe ;—the other the *Japonica*, with ovate, setaceous-serrate floriferous leaves. The former is most frequently cultivated; which it may be by sowing the berries in a dry stony soil: they often remain two years before they vegetate.

Pointer. See Dog.

POISON, any substance which proves injurious or fatal to the life of animals, whether taken in small portions by the mouth, mixed with the blood, or applied to the nerves by friction of the skin, or other means. Most of the substances commonly called poisonous, are only so in certain doses: for when given in smaller quantities, many of them form active and valuable medicines. Others are fatal in the smallest quantities, such are those of hydrophobia, and the plague. Others are innocent when taken into the stomach, but prove deleterious when applied to the lungs, or an abraded surface. And others act as poisons, whether applied externally or internally, as arsenic.

Poisons are sometimes only such to particular animals: thus, aloes are poisonous to dogs and wolves; the water-hemlock, or *phellandrium aquaticum*, kills horses, whilst oxen devour it greedily, and with impunity. Others again produce disease in, or destroy all animals, such are arsenic, corrosive sublimate, &c. They are also divided into mineral, vegetable, and animal poisons.

Whenever any person is supposed to have taken poison, in order to ascertain the nature of it, the poisoned aliment, if any, should first be examined: and the patient, as well as the persons present, should also be strictly interrogated, and the symptoms carefully observed. It is also necessary to endeavour to learn the quantity of poison taken into the stomach; and whether it was given or taken in medicine, food, drink, or any other form. The time which has elapsed since the swallowing of the poison, and the efforts which have been already taken for the relief of the patient, should also be carefully inquired into. And let it never be forgotten, either by the patient himself, or by those by whom he is immediately surrounded, that firmness and *presence of mind*, in such calamitous situations, are the most likely to enable them to adopt the means necessary for relief or escape from such imminent danger. It often happens that poisons are taken, and their effects produced, before any medical attendant can be obtained; and of course the best advice will at once be had; as, however, that may, and often does, arrive too late, and as the earliest application of the antidote promises the most success, no time is to be lost, and therefore the family prescriber must, as it is his imperious duty, exert his utmost skill and attention in such an emergency.

All the known poisons may be arranged under the five following heads:

First: *Irritating, or those which produce inflammation of the parts to which they are applied.*

This class includes the concentrated acids, alkalies, corrosive sublimate, and all the mercurial preparations, arsenic, and arsenical compositions; verdigris and the other salts of copper; emetic tartar, butter of antimony, and the other preparations of antimony; the oxides and salts of tin, gold, bismuth, nitrate of silver, sal ammoniac, liver of sulphur, nitre; the salts of barytes, glass in fragments, cantharides, the salts of lead; acrid plants, or their concrete juices, as colocynth, mezereon, ranunculus, great celandine, wolf's bane, savine, gamboge, euphorbium, &c.

All these inflame the parts with which they come in contact, but in different degrees. Some produce so much inflammation that they may be regarded as caustics almost as powerful as the actual cautery; they are called corrosive escharotics; and they evidently cause death in the same manner as burns: such are the concentrated acids and alkalies, the nitrate of silver, mezereon, &c. The caustic effects of others are less intense, but which, however, cause death in a more rapid manner, because they are absorbed, mixed with the blood, carried into the circulation, and destroy the vital properties of the heart, lungs, brain, and nervous system. Such are arsenic, corrosive sublimate, barytes, wolf's bane, &c.

The different action of these poisons, and the symptoms to which they give rise, are not always the same, it will be useful, therefore, to treat them under subdivisions.

The *concentrated acids*: viz. the *sulphuric, nitric, muriatic, phosphoric, oxalic, tartaric, acetic*, and *citric*, we have treated of under the article AQUA FORTIS, to which, therefore, we refer.

When sulphuric acid or oil of vitriol has been swallowed, it may be necessary to observe, that although the general mode of treatment must be the same as that mentioned under aqua fortis, yet water alone should not be given; nor should calcined magnesia with water be given, but common magnesia, (carbonate of magnesia,) may be given freely when mixed with water. There will be too much heat generated in the stomach if these precautions be not attended to.

The effects of the *alkalies*, and *alkaline earths, potash, soda, ammonia*, and *lime*, are nearly similar to those caused by acids, except that the taste of alkalies is not sour, but acrid and urinous; the matter vomited does not effervesce when mixed with chalk, but turns the blue colour of violets green. The concentrated volatile alkali acts with much greater energy than the others; experience proves that it is even very dangerous to cause persons who have fainted to respire it too long; the vapour inflames the throat and the lungs, and occasions death, as has been lately proved. It is necessary, then, in similar situations, to pass the phial containing the alkali, under the nose only from time to time. Vinegar and lemon-juice, as mentioned under ALKALIES and LIME, are the best antidotes for these poisons; and if these be not sufficient, the *after* treatment, as described under AQUA FORTIS, must be resorted to.

The alkalies, dissolved in pure water, turn syrup of violets green. The *volatile* alkali, or ammonia, is readily discovered by its odour. *Potash* is precipitated by muriate of platina; *soda*, on the contrary, remains transparent; neither are changed by sulphuric or carbonic acid. Lime-water throws down a white precipitate, by adding carbonic acid, or any of the carbonates; and is not changed by sulphuric acid. Turmeric is a very delicate test for the alkalies; a spirituous, or watery infusion of which is yellow, but which alkalies change to a brick or orange red.

When *corrosive sublimate*, and other mercurial preparations, *verdigris*, and other salts of copper, have been taken as poisons, the method of relief to be adopted is to be the same as mentioned under CORROSIVE SUBLIMATE.

For the method of treating persons who have taken arsenic, and of distinguishing arsenical preparations, see ARSENIC.

All the mercurial preparations, heated to redness in a glass tube, with potash, are decomposed; and the metal, which is seen sticking to the edge, becomes quickly volatilized. Corrosive sublimate, when dissolved in water, yields, by the addition of potash, a light yellow precipitate; and with ammonia, a white precipitate. The red oxide dissolves in muriatic acid, and thus becomes corrosive sublimate; cinnabar, or vermilion, is insoluble in water and muriatic acid. Mercurial ointment, boiled in water, is decomposed; the lead being melted, and the mercury separated.

For the means of distinguishing the preparations of copper, see COPPER.

When any of the following preparations of *antimony* have been taken, viz: emetic tartar, butter of antimony, kermes mineral, golden sulphur of antimony, submuriate of antimony, flowers of antimony, diaphoretic antimony, glass of antimony, and crocus metallorum, besides the general symptoms mentioned under CORROSIVE SUBLIMATE, they occasion, more particularly, excessive vomiting, copious intestinal evacuations, great difficulty of respiration, and often so great a constriction of the throat, that the patient is unable to swallow; violent cramp in the extremities; and a sort of drunkenness and a faintness more or less considerable.

Should there be great vomiting, with

cramp in the stomach, abundant supplies of sugar and water must be administered. If the vomiting continue after the poison may be supposed to be ejected, and the pain increases, a grain of opium may be given and repeated at an interval of a quarter of an hour, for two or three times, if the symptoms are not abated. In defect of opium, give an ounce of syrup of white poppies, or the decoction of three or four poppy heads.

Where the symptoms continue, or increase, twelve or fifteen leeches may be applied to the abdomen, and also to the throat, if there be great difficulty of swallowing. If the patient does not vomit, yet suffers from the other symptoms, several glasses of sugar and water should be taken; if vomiting does not occur, boil four or five gall-nuts, bruised, for ten minutes, in two quarts of water, and strain; or, in their stead, two ounces of Peruvian bark, or the bark of oak or willow, may be used. The decoction to be drunk in liberal doses. Ipecacuanha, white or blue vitriol, must not be given to excite vomiting, as they will increase the mischief. If, notwithstanding the use of these means, the symptoms continue, the *after* treatment, as mentioned under AQUA FORTIS, must be adopted.

By heating most of the preparations of antimony to redness, in a crucible, we obtain a metallic button, distinguished by its whitish blue colour, and also by having the property, when heated with nitric acid, of giving a whitish powder, dissolvable in muriatic acid. Emetic tartar, placed upon burning coals, becomes black, and leaves metallic antimony. Butter of antimony, when mixed with water, produces a white precipitate.

The *preparations of tin* are poisonous although metallic tin is not at all noxious.

When, therefore, the preparations of tin have been taken, the general symptoms of which will be found under CORROSIVE SUBLIMATE, milk will be found the best counter-poison; of this, several glasses full are to be given, or in defect of milk, warm or cold water, to excite vomiting. If the symptoms increase, the directions given in the *after* treatment, under AQUA FORTIS, must be attended to.

The *salts of tin* are *not* precipitated by distilled water; but potash causes a white, and the hydro-sulphurets a yellow or chocolate precipitate.

Poisoning from the salts, &c., of *bismuth, gold,* and *zinc,* for the general symptoms of which, see also CORROSIVE SUBLIMATE, is to be treated in the same manner as that produced by arsenic. See ARSENIC.

The salts of bismuth are precipitated of a white colour by distilled water, and of a black by the hydro-sulphurets. The salts of gold are yellow, and are precipitated black by sulphate of iron. The salts of zinc are, by potash and the hydro-sulphurets, precipitated white.

If *Nitrate of silver* be taken as a poison, muriate of soda, or common salt, is the best antidote. A large spoonful should be dissolved in a quart of water, and several glasses of this salt water be taken; vomiting will take place, and the symptoms diminish. If they should continue, the means pointed out in the *after* treatment, under AQUA-FORTIS, must be adopted.

When nitrate of silver is heated to redness, the metal is reduced. Dissolved in water, and mixed with a solution of muriate of soda, a white precipitate is thrown down; phosphate of soda causes a yellow, and chromate of potash a red precipitate.

When *nitre* is taken in large doses, it is poisonous, producing obstinate vomiting, often bloody, and a high degree of inflammation of the stomach; it also particularly affects the nervous system, often producing a sort of intoxication, palsy, convulsions, and other nervous diseases. The cure is the same as that for arsenic, except that the lime water must be omitted. See ARSENIC, and also NITRATE OF POTASH.

Sal Ammoniac is poisonous when introduced into the stomach, or applied in large quantities to wounds, producing convulsions, pain in the bowels, great change in the features of the face, and death.

Vomiting is to be excited by several glasses of sugar and water, or water, irritating the throat with a feather or the fingers. If the pain of the stomach be great, twelve or fifteen leeches may be applied; the nervous symptoms are then to be combated by the anti-spasmodic mixture, prescribed in the *after* treatment under AQUA FORTIS; and the subsequent treatment must be the same as mentioned under that article.

Liver of sulphur, or sulphuret of potash, sometimes employed to form barege, and other artificial sulphureous baths, far from being a counter-poison to lead, arsenic, &c., as some persons believe, is a violent poison. Two or three ounces may be used for a bath without any danger, but the twentieth part of this swallowed may produce distressing symptoms, and even death. The effects are nearly similar to those of nitre, but much more violent. See above.

The cure consists in mixing two spoonfuls of vinegar, or lemon-juice, in a glassful of water, of which several doses are to be taken. When vomiting is produced, and the poison decomposed, twelve or fifteen leeches should be applied to the stomach and bowels. The subsequent treatment must be the same as that mentioned under AQUA FORTIS.

Liver of sulphur is a solid of a greenish yellow colour; on being mixed with vinegar and water it disengages an insupportable odour like rotten eggs.

For the treatment of those who have taken the salts of *barytes* as poisons, see BARYTES.

Phosphorus, when taken as a poison, gives rise to the same symptoms as the mineral acids. See, therefore, AQUA FORTIS.

For obviating the effects of *cantharides*, or *Spanish flies*, when taken in immoderate doses, or as a poison, see FLY, the SPANISH.

When *Glass*, or *Enamel*, has been incautiously swallowed, in pointed pieces, they produce alarming consequences. See GLASS.

For the mode of treating the diseases arising from the various poisons of *lead*, see LEAD.

The following *vegetables* are more or less *irritating poisons*; and, although many of them are powerful medicines in the hands of the skilful, they should always be administered with extreme caution and circumspection. An account of most of them will be found in the order of the alphabet: we enumerate them here in order to render their names and deleterious powers more impressive. Aconite, or monk's hood, anemone, bryony, clematis, meadow saffron, colocynth, tetterwort, mezereon, spurge-flax, elaterium, crown imperial, black and white hellebore, bear's foot, gamboge, hedge-hyssop, spurge, daffodil, Barbadoes or purging nut, castor-oil nut, crow-foot, poison oak, houseleek, savine, squill, stavesacre, and scammony.

The effects produced by these, or particular parts of these plants, when taken into the stomach in large doses, are an acrid, pungent taste, more or less bitter, excessive heat, great dryness of the mouth and throat, desire to vomit, vomiting; and the efforts to vomit continued after the stomach is emptied; purging; pain more or less violent in the stomach and bowels; pulse strong, frequent, and regular; respiration difficult, quicker than usual; the patient staggers as if intoxicated; the pupil of the eye dilated; insensibility at length so great as to induce a belief that death has taken place; the pulse becomes slow, and death sometimes closes the scene. Some of these poisons produce convulsions, rigidity of the limbs, acute pains, accompanied with the most plaintive cries.

The treatment, in general, should be the same as that recommended under corrosive sublimate, except that the white of egg is not necessary. Emetic tartar, vinegar, and other irritating fluids, must be refrained from. It sometimes happens that the poison does not occasion great pain in the stomach, but vomiting attended with great dejection and insensibility. In this case, after having favoured the vomiting by sugar and water, several small cups of coffee should be given : this is to be prepared by infusing a quart of boiling water upon eight ounces of coffee for half an hour, and straining it. At the same time, three or four grains of camphor, mixed by means of white of egg, may be given. Should the coffee be rejected, it must be administered by clyster and friction. If pain arise in the stomach or bowels, twelve or fifteen leeches must be applied. When, in place of dejection and insensibility, there is great excitability, convulsions, delirium, &c. it is necessary to excite vomiting by sugar and water, and then give the opiate mixture, or decoction of poppy, as mentioned under AQUA-FORTIS.

SECOND : *Narcotic or stupefactive poisons.* This class comprehends *opium,* and other preparations from *poppies, henbane, Prussic acid,* and all other substances which contain it; as the *cherry laurel,* the *oil, extract,* and *distilled* water of the same, the distilled oils and waters from most bitter kernels; and *bitter almonds,* the *strong-scented lettuce, nightshade,* the *yew,* and the *lentil.*

When any of the above poisons are introduced into the stomach, or applied to a wound, the following effects are noticed : stupor, numbness, heaviness in the head, desire to vomit ; slight at first, but afterwards insupportable ; a sort of intoxication, stupid air, pupil of the eyes dilated, furious or lively delirium ; sometimes pain, convulsions, more or less violent, of different parts of the body, palsy of the limbs, pulse variable, but in general strong and full at the commencement of the disease ; respiration somewhat accelerated, vomiting, especially when the poison has been applied to a wound, or given in the form of clyster ; the convulsions and dejection increase ; and, if relief be not quickly given, death ensues.

If the poison has been introduced into the stomach, we ought to begin by giving four or five grains of emetic tartar in a glass of water.

If at the end of a quarter of an hour, vomiting does not take place, twelve grains of sulphate of zinc, (white vitriol) must be given in a glass of water, and repeated, after an interval of a quarter of an hour, if necessary. If these measures do not succeed, three or four grains of sulphate of copper, (blue vitriol,) must be administered ; all this is to be done with the intention of ejecting the poison either upwards or downwards. The operation of these remedies may be favoured by irritating the throat with the finger or a feather. The emetic ought not to be dissolved in a large quantity of water ; neither should much liquid be given with a view of hastening the vomiting, as, far from being useful, the disease is thereby aggravated. Experience has proved that vinegar and lemon juice, so much recommended by some medical men, ARE VERY INJURIOUS, if given before the poison has been expelled, either by vomiting or stool. If it be supposed that the poison has been taken long enough to reach the intestines, the purgative clyster, mentioned under the article LEAD, ought to be administered.

The poison being altogether evacuated, or nearly so, the patient is still far from being out of danger, and may yet sink if abandoned to himself. It is then necessary to administer alternately, every five minutes, a cup of water acidulated with vinegar, lemon juice, cream of tartar, or any vegetable acid at hand : such as cider, perry, the juice of grapes, oranges, &c. ; and a cup of coffee prepared as mentioned above ; the limbs should be rubbed with a piece of flannel, or a brush. The use of the coffee and the acidulated water, must be continued till the patient is out of danger.

When the drowsiness is extreme, and the disease resembles an attack of apoplexy, and no alleviation is obtained by the means here recommended, bleeding at the arm, or, which is preferable, in the jugular vein, must be had recourse to.

If the poisoning has arisen from an application of the narcotic to external wounds, vomiting should be immediately excited ; and the use of coffee, acidulated water, &c. as directed above, must be immediately resorted to. See also PRUSSIC ACID.

THIRD: *Acrid Narcotics.*

This class comprehends *mushrooms, nux vomica, the upas, false angustura, St. Ignatius's bean, camphor, cocculus indicus, tobacco, hemlock, belladonna or deadly nightshade, stramonium, or thorn apple, fox glove, rose bay, manchineel, spirituous liquors, emanations from flowers, horned or spurred rye.*

For the cure of those who have eaten poisonous mushrooms. See MUSHROOMS.

For the cure of those who have taken either nux vomica, the poison of the upas, St. Ignatius's bean, false angustura, camphor, or cocculus Indicus. See NUX VOMICA.

The general effects of tobacco, deadly nightshade, or belladonna, stramonium, or thorn apple, fox glove, the rose-bay, rue, hemlock, the lesser hemlock, darnel, or rye-grass, manchineel, and horned or spurred rye, are the same. These poisons, when introduced into the stomach, or applied to wounds, give rise to the following symptoms; agitation, pain, sharp cries, a sort of delirium, more or less lively; convulsive movements of the face and limbs; the pupil of the eye dilated; the pulse strong, full, frequent, and regular; or small, slow, and irregular; nausea, succeeded by vomiting and purging, with pains in the stomach, more or less violent. Sometimes, in place of great agitation, a sort of intoxication, with great weakness, and general trembling, are succeeded by insensibility; in such case there is no nausea.

If there has been no vomiting, give an emetic, as advised above in the directions relative to opium, &c. If a long time has elapsed since the poison has been swallowed, administer the *purgative clyster*, referred to in the same paragraph. Should the patient appear to be in a fit of apoplexy, even after the stomach and bowels have been evacuated, he should be bled in the arm, or, preferably, in the jugular vein. The *vinegar and water*, recommended for opium, &c. may then be administered. It cannot be too often repeated, that *this remedy is injurious if taken before the poison has been evacuated.* On the contrary, if the pain of the stomach be very great, and the poison not yet evacuated, twelve leeches should be applied to the seat of the pain, and the patient made to drink sugar and water, linseed, or mallow tea; in a word, the directions given above, for *irritating vegetable poisons*, are to be followed.

Relative to *tobacco*, it is necessary to observe, that violent vomiting, with a sort of intoxication, has arisen from the external application of ointment made with powdered tobacco and butter; the same accidents have also occurred from the use of a decoction of tobacco as a wash for the itch; snuff may be also injurious in the same way, and also if taken incautiously, in large quantities, by persons not accustomed to it. Introduced into the stomach, tobacco occasions vomiting, purging, great trembling, convulsions, and even death.

Not only *spirituous liquors*, such as wine, ether, brandy, rum, geneva, or gin, &c. taken in large doses, occasion intoxication, but also air, which is charged with the vapours of spirituous fluids, such is that of a confined room, in which open vessels of spirits are placed: indeed, sitting over the stream of a pipe of wine, whilst it is bottling off, has produced intoxicating and alarming effects.

The symptoms of *intoxication* from such causes, are usually dissipated at the end of ten, twelve, or fifteen hours; but as sometimes such is not the case, and the individual may be in great danger, we think it expedient to state the means which ought to be pursued for his recovery.

Begin by giving two or three grains of emetic tartar, dissolved in a glass of water, and favour the vomiting by abundance of warm water, and by tickling the throat with a feather; when vomiting is produced, the patient should take, every ten minutes, half a glass of water mixed with a spoonful of vinegar or lemon juice; the purgative clyster, mentioned under the article **Lead**, must be administered, and the body should be rubbed with cloths steeped in vinegar. If, in spite of these measures, the patient continue insensible, and he be robust, let him be bled from the arm, or rather apply twelve leeches to the neck.

Emanations from flowers have, in a confined room, sometimes produced head-ach, nausea, and occasionally convulsions and swooning. After removing the sufferer from the apartment in which the flowers are, make him respire the vapour of vinegar, and let him drink some sugar and water. And if he be in a swoon, the mode of treatment, as mentioned under **Charcoal**, may be followed. If there be convulsions, the antispasmodic mixture, mentioned under **Aqua fortis**, should be given.

Rye suffers sometimes from a disease which changes its form and composition, and is thereby rendered poisonous. It becomes covered with a violet-coloured skin, and becomes lengthened into the form of a horn or spur; to this the name of *ergot* has been given, as well as *horned rye*, and spurred or speared rye. It has been supposed to be occasioned by an insect. When bread, which contains this rye, is eaten, an uneasy sensation is experienced in the feet, similar to the stinging of ants, followed by a sharp pain in the stomach, with nausea; the hands and feet are also violently contracted, and the limbs appear out of joint, with a variety of other distressing and convulsive symptoms. A canine appetite succeeds, the patients rarely having any aversion from food; sometimes spots are observed on different parts of the body. These effects are observed when only a small quantity of the poisonous rye is eaten, but when a large quantity is taken, or its use continued for some time, the symptoms are much more alarming; the patient is unable to move or support himself upon his legs; violet-coloured spots, and little blisters arise, gangrene shows itself in all its horror, and rises to the knee.

If the disease be slight, and if there be but little fever, with head-ach and convulsive movements, give a small wine glass full of the antispasmodic mixture, prescribed under **Aqua-fortis**; and let the patient drink some water mixed with a little vinegar or lemon-juice. If pain, succeeded by great numbness and cold, should announce the approach of gangrene, endeavours must be made to prevent it. The patient should be placed in a clean bed, in a dry and warm apartment, and the bed clothes should be frequently changed. A wine-glass full of an infusion, made by pouring half a pint of boiling water upon a drachm of ipecacuanha, and after it has stood about ten minutes, to be strained, may be given, every ten minutes, till vomiting is produced; and a large quantity of warm water should also be given to excite vomiting. When the patient complains of great numbness of the lower extremities, he should be placed in a warm bath, prepared with a decoction of aromatic plants, such as lavender, rosemary, sage, &c., sharpened with a little vinegar. On quitting which, the foot and leg should be rubbed with the hand or flannel, and covered with compresses steeped in the following decoction, of which the patient may also take a large wine-glass full three times a day: boil four ounces of Peruvian bark in a quart of water for a quarter of an hour; strain, and add half an ounce of sal-ammoniac, and one ounce of chamomile flowers; when cold let it be strained again.

If the numbness and cold continue, apply large blisters; and if nothing else can prevent gangrene, use the following fomentation several times a day. Boil in a quart of water, four ounces of calcined alum, three ounces of sulphate of copper (blue vitriol) and one ounce of common salt, till it is reduced to a pint.

Sometimes the gangrene renders it absolutely necessary that amputation of the limb should be effected; of course, an experienced surgeon must be consulted for this operation.

It may be, perhaps, useful to mention, that the fruit of the *feuillea cordifolia* has been lately found a powerful antidote against vegetable poisons. It

is given internally, and applied also as a poultice to wounds. *The facts*, however, relative to its use, are too scanty for us to give more minute details.

FOURTH: *Septic, or putrefactive poisons.*

This class comprehends the poison of the *viper*, and all other animals, the bite or sting of which gives rise to accidents more or less serious; animals that may become baneful by being taken into the stomach; malignant pustules, and canine madness, or hydrophobia.

The venomous animals whose bite or sting is accompanied by symptoms more or less severe, are the viper, the rattle-snake, the cobra de capello, katuka rekula, rodroo pam, geri paragoodoo; the scorpion, tarantula, bee, wasp, hornet, spider, gadfly, gnat, &c.

For the treatment of those who are bitten by any of the serpent tribe, the adder or viper, rattle-snake, &c. See SERPENT.

The sting of the *European scorpion* is not very dangerous. It only occasions serious consequences in hot climates, where it produces inflammation and pustules, accompanied with fever, numbness, vomiting, hiccup, and great trembling. The internal treatment should be the same as that mentioned for the viper, under SERPENT. Externally, a poultice of linseed meal, or bread and milk, moistened with ten or twelve drops of solution of ammonia, should be applied.

For the stings of wasps, bees, gnats, hornets, gadflies, tarantulas, spiders, &c. see BEE-STING. We merely add here, that the sting may, it is said, in general, be removed by making strong pressure over it with the barrel of a small watch-key. If, however, the accident has occurred during a time of extreme heat, or if the animal has sucked any poisonous plants, or fed on the body of an animal which has died from any pestilential disease, the symptoms may become more serious, similar to those arising from the bite of a viper, and may be followed by death. In such a case, it will be necessary to cauterize the wound, and to act according to the directions given for the treatment of *the bite of the viper*, under SERPENT.

Of the animals which sometimes give rise to dangerous symptoms when taken into the stomach, muscles, the dolphin, the conger-eel, the king fish, the yellow bill, some kinds of oysters, crabs, lobsters, and other fish, not fresh, may be mentioned. Under certain circumstances, they occasion symptoms more or less serious, and even death has been sometimes the effect of their ingestion.

Although experience proves that these fish are sometimes poisonous; it also demonstrates, that they are far from being so at all times, and to all persons. The individual who can eat them with impunity in our climate, and in all seasons, may be greatly incommoded by them in hot climates, especially during the summer season. Muscles serve as an aliment to many persons, whilst in others, they produce the most unpleasant effects. The wholesomeness or unwholesomeness of many fishes, particularly shell fish, appears to depend much upon what they feed.

The dolphin has sometimes produced violent head-ach, nausea, and crimson-coloured spots on the skin, with an insupportable itching, and constriction of the chest. The conger-eel, vomiting, purging, pains in the bowels, fainting, convulsive twitching, palsy of the limbs, a coppery taste in the mouth, with a burning sensation in the throat. The yellow bill *(clupea thrisa)* see HERRING, has caused horrible convulsions, inflammation in the stomach, and death. Muscles produce acute pain in the head and stomach, with great difficulty of breathing, general uneasiness, redness, swelling of the face and eyelids, and intolerable itching of every part of the body; convulsions; and sometimes, but very rarely, death.

Putrid crabs, and other putrid fish, are also productive of very unpleasant consequences.

In the cure, begin by giving the emetic ordered for *opium*, &c. above. If the poison has been swallowed some time, so as to have passed into the bowels, administer a purgative and a purging clyster, of the same nature as are directed under **Lead**. Immediately after these remedies have had effect, give twenty or twenty-five drops of ether upon a lump of sugar, and the antispasmodic mixture prescribed under the article **Aqua-fortis**. Besides which, mix two spoonfuls of vinegar, or lemon-juice, in a little water, and let this be taken as a common drink. If there be much fever, with violent and continued pains of the stomach, apply ten or twelve leeches to the upper part of the belly.

For the treatment of the *contagious malignant pustule*, see that article.

For the cure of the bite of a mad dog, and other mad animals, see **Bite of a Mad dog**, and **Hydrophobia**.

Fifth: *The poisons of certain gases, when inhaled, usually producing the state called asphyxia, or apparent death.*

For the treatment of persons apparently dead from the inhalation of carbonic acid, whether from the *fumes of burning charcoal, the exhalations of lime-kilns, the gas from fermentation, the choak damp of mines, the gas of wells*, or the *gas in the lower parts of caverns*. See **Charcoal**.

Privies, and common sewers, very often contain noxious exhalations, the chief of which is sulphuretted hydrogen gas; and this, when mixed with a large quantity of atmospheric air, is still a very energetic poison. We constantly hear of accidents occurring from places of this nature; no one should be suffered, therefore, to descend into them until they have been well ventilated: persons employing labourers for such purposes, should take care that such ventilation has been effected before any one is permitted to descend. See **Air**.

If exposure to such exhalations has lasted but a short time, the sufferer experiences a general uneasiness, accompanied with nausea, sickness, convulsions, &c. But when any individual has been long exposed to the action of the deleterious gas, or but a very short time, if the gas is in large quantity, all power of motion and sensation is lost; a frothy saliva, tinged with blood, flows from the mouth; the lips and face are livid; the eyes are shut; the pulse small and frequent; the respiration short, difficult, and convulsive: the heart is also considerably disturbed; the extremities relaxed: these are succeeded by agitation, and convulsions more or less excessive.

Exposure to cold air, sprinkling, or affusion of cold vinegar and water, and frictions with a hard hair-brush, are the first means to be resorted to. If it be possible to procure the oxygenated muriatic acid gas, (chlorine) the patient should be made to inspire the vapour; but care must be taken that this be not continued too long, lest the lungs should be injured by it. This remedy is especially useful when it can be speedily had recource to.

It frequently happens, that a portion of fluid has been swallowed; whenever this is the case, the patient should be made to vomit, by giving him a glass of oil, or, still better, two grains of emetic tartar, and twenty-four grains of ipecacuanha. When these means are insufficient, and there are violent palpitations of the heart, blood must be drawn from the arms, and allowed to flow in proportion to the strength of the patient. Endeavours must also be made to calm the convulsions, spasms, and other nervous affections, by the cold bath, and the use of the antispasmodic mixture referred to so often above. After the bath the patient should be placed in a warm bed, and the friction of the hair-brush continued. Lastly, if, notwithstanding all these efforts, the sufferer continues senseless and motionless, mustard poultices and blisters must be applied to the feet.

The poison arising from bad wines, is generally produced by a mixture of some preparation, or salt of lead. See **Lead**. See also **Wine**.

As a conclusion, on the subject of poison, it may be useful to bring the different modes of treatment, &c. into one view; we have, therefore, arranged the following tables. Of course, for more minute particulars, the whole of this article, as well as the others referred to in our work, must be consulted.

POISONS

Substances.	*Symptoms.*	*Remedies.*
Concentrated Acids: the vitriolic or sulphuric, nitric, muriatic, oxalic, &c.	Burning pain, vomiting, matter thrown up effervescing with chalk, salt of tartar, lime, or magnesia.	Calcined magnesia; one ounce to a pint of warm or cold water. A glassful to be taken every two minutes, so as to excite vomiting. Soap, or chalk and water; mucilaginous drinks afterwards; such as linseed tea, or gum Arabic and water.
Alkalies: potash, soda, ammonia, lime, &c.	Nearly the same: the ejected matter does not effervesce with alkalies, but with acids.	Vinegar or lemon-juice; a spoonful or two in a glass of water very frequently; simply warm water.
Mercurial Preparations: corrosive sublimate, &c. &c.	Sense of constriction in the throat; matter vomited sometimes mixed with blood.	White of eggs; twelve or fifteen eggs beaten up, and mixed with a quart of cold water. A glassful every three minutes. Milk, gum water, linseed tea.
Arsenical Preparations: white arsenic, &c. &c.	Extreme irritation; pain, sickness, and speedy death, if the poison be not soon counteracted.	Warm water, with sugar; in large quantities, to excite vomiting. Lime-water, soap and water, pearl-ash and water, mucilaginous drinks.
Preparations of Copper: brass, verdigris, halfpence, &c.	Symptoms nearly the same as from mercury.	White of eggs: mucilaginous drinks. See *mercurial preparations*, above.
Preparations of Antimony: emetic tartar, &c.	Extreme sickness, with other symptoms of poison, as above stated.	Warm water, or sugar and water; afterwards a grain of opium, or fifteen drops of laudanum, every quarter of an hour, for two or three times.
Nitre, or **Salt-petre.**	Obstinate vomiting, sometimes of blood, &c. &c.	The same as for arsenic, with the exception of lime water and alkalies.
Phosphorus.	Like mineral acids.	Like mineral acids.
Lead: sugar of lead, Goulard's extract, &c.	Great pain in the stomach, with constriction of the throat, &c. &c.	Large doses of Glauber's or Epsom salts, in warm water.
Barytes: the carbonate, muriate, &c.	Vomiting, convulsions, palsy, pain in the stomach, &c.	Half an ounce of Epsom or Glauber's salt, dissolved in a quart of water. Several glasses to be taken. In place of these salts large draughts of hard well-water.
Prussic Acid.	The most virulent of poisons, producing almost instant death when applied even in small quantities to the surface of the body.	Emetics: afterwards oil of turpentine, ammonia, brandy, with warmth, friction, and blisters.
Sal Ammoniac.	Excessive vomitings, convulsions, pain in the bowels, alteration of the features, death.	Vomiting, to be rendered easy by large draughts of warm sugar and water. If vomiting be not produced by the poison it must be excited by the finger. Afterwards opiates.
Glass, or **Enamel.**	If taken in coarse powder, produces irritation and inflammation of the bowels.	Large quantities of crumb of bread should be eaten. Afterwards an emetic of white vitriol, and demulcent drinks.
Alcohol:— brandy, rum, gin, wine, &c.	Intoxication; when taken in large quantities insensibility, apoplexy, or paralysis; countenance swoln, and of a dark red colour; breathing difficult; often death.	A powerful emetic of white vitriol, or emetic tartar; vomiting to be encouraged by warm water, and large clysters of salt and water; bleeding; if the head be very hot, cold wet cloths may be applied. If the extremities be cold, friction.

POISONS

Substances.	*Symptoms.*	*Remedies.*
Irritating Vegetable Poisons:—Monk's hood, meadow saffron, ipecacuanha, hellebore, bear's foot, savine, &c. &c.	Acrid taste; excessive heat; violent vomitings; purging; great pain in the stomach and bowels. Externally applied, many of them produce inflammation, blisters, pustules.	If vomiting be produced by the poison, large draughts of warm water or thin gruel to render it easier. If insensibility be present, white vitriol, or other active emetic; after the operation of which, a brisk purgative. Then strong infusion of coffee, or vinegar, diluted with water.
Narcotics:—opium, henbane, hemlock, nightshade, &c. &c.	Stupor, desire to vomit; heaviness in the head, dilated pupil of the eye, delirium, speedy death.	Four or five grains of emetic tartar, in a glass of water: if this does not succeed, four grains of blue vitriol, as an emetic. Do not give large quantities of water. *After* the poison has been ejected, give vinegar, lemon juice, or cream of tartar, and strong coffee.
Acrid Narcotics:—Mushrooms;	Nausea, heat, pain in the stomach and bowels; vomiting, purging, thirst, convulsions; cold sweats, death.	Three grains of emetic tartar in a glass of water; in fifteen minutes the dose to be repeated; after vomiting, frequent doses of Glauber's or Epsom salts, and stimulating clysters.
Nux vomica, St. Ignatius's bean, the upas, cocculus indicus, &c.	None of these inflame the part they touch. Introduced into the stomach, or applied to wounds, they are rapidly absorbed, producing, generally, rigidity, convulsions, and death.	The emetic as under mushroom; lungs to be inflated. Two ounces of water, one drachm of ether, two drachms of oil of turpentine, and half an ounce of sugar, mixed together; two spoonfuls of which to be taken every ten minutes.
Poisonous Fish:—old wife, lobster, crab, dolphin, conger eel, muscle, &c. &c.	In an hour or two, or sooner, after some fish have been eaten, more especially if stale, weight at the stomach, sickness, giddiness, thirst, &c. come on; in some cases death.	An emetic; vomiting to be excited by tickling the throat with the finger, and by draughts of warm water. After vomiting, an active purgative. Afterwards vinegar and water, or water sweetened with sugar, and an addition of ether. After the evacuations, laudanum.
Poisonous Serpents:—the viper, or adder, rattle-snake, &c. &c.	A sharp pain in the wounded part, soon extending over the body; great swelling, first hard and pale, then reddish; faintings, vomiting, convulsions; inflammation, often extensive suppuration, gangrene, and death.	A moderately tight ligature to be applied above the bite, and the wound left to bleed, after being washed with warm water. The actual cautery, lunar caustic, or butter of antimony, to be applied. Then lint dipped in equal parts of olive oil, and spirit of hartshorn. Ligature to be removed if the inflammation be considerable. Warm diluting drinks, with small doses of ammonia or hartshorn, to cause perspiration. The patient should be well covered in bed, drinking occasionally warm wine. If gangrene threaten, wine and bark must be given freely.
Spanish Flies.	Nauseous odour of the breath, burning heat in the throat and stomach; vomiting, often bloody; bloody stools; painful priapism, heat in the bladder, convulsions, delirium, death.	Vomiting freely excited by sweet-oil, sugar and water, milk, or linseed tea; emollient clysters. Camphor dissolved in oil may be rubbed over the belly and thighs.
Venemous Insects:—tarantula, scorpion, hornet, wasp, bee, gnat, &c.	In general only a slight degree of pain and swelling; sometimes sickness and fever.	Hartshorn and oil, salt and water; a few drops of hartshorn may be taken internally in a glass of water. The sting may, in general, be removed by making a strong pressure over it with the barrel of a small watch-key.

POISON-ASH, or *Amyris toxifera*, a small tree with smooth light-coloured bark, which grows usually on rocks in the Bahama islands; it yields a liquid gum as black as ink. Although poisonous to animals, it affords a fruit that is eaten by one or two species of the grosbeaks.

Poison-oak. See SUMACH.

Poison-nut. See NUX VOMICA.

Poison-tree. See UPAS.

POKER, a bar of iron wrought into a particular shape, with which the fire is stirred. Many accidents occur from the impropriety of leaving the poker in the fire, after stirring it; the best way of avoiding which is, never to leave it in such a situation. But if a small cross of iron, projecting about an inch and a half each way, were welded or soldered above the square part of the poker, called the bit, it cannot be thrust into the fire farther than that part, and if it should fall out, the fender would most probably arrest it, and prevent its falling on the floor, and of course prevent the mischief; and should it even fall on the floor, the probability is, that the heated part could not remain in contact with it.

Pole cat. See OTTER.

POLITICAL ECONOMY, that science by which the wealth of nations is consulted and promoted. Great difference of opinion exists at the present time, as to the means by which all the objects of the political economist may be best obtained. But a fundamental error appears to pervade almost all the reasonings which have been urged on this important topic. *Profit* or *gain* is the object of the individual in every society which has hitherto existed in the world; but we think it is equally clear, that where *nations* have made profit or gain their object, rather than the happiness of the people generally, much misery has always been the result. Whether these objects have been attempted by engaging in expensive wars, or by protecting monopolies, they all tend to the aggrandizement of individuals, and to the impoverishment and misery of the great bulk of the people of a state. Profit is essentially necessary to what is called the *prosperity* of an individual, but national *happiness* is a very different affair. It has been truly said, that, were Great Britain surrounded with an insurmountable wall of brass, we have ample resources within ourselves, for the comfort and happiness of all, indeed for a far greater population than exists at present in this island. If this be true, which we cannot permit ourselves to doubt, what becomes of those Malthusian doctrines which have, we fear, led the world so widely astray! Individual aggrandizement is a rock on which the happiness of a large portion of the community has already been wrecked.

Politeness. See GOOD BREEDING.

POLL-EVIL, an abscess formed in the sinuses between the poll-bone and the uppermost vertebræ of the neck of a horse. It generally proceeds from a blow on the pole or back part of the head. The cure consists first in the application of stimulating or blistering liniments, which will promote the progress of the matter to the surface; when this has been done, a free and extensive incision should be made, so that the finger may be introduced, and the length of the sinuses or pipes ascertained: all these should be freely opened also. When the bleeding has ceased, some caustic should be applied to all the diseased parts; such as butter of antimony, solution of sublimate in muriatic acid, or quicksilver in nitrous acid, or the scalding mixture mentioned under FISTULA of the WITHERS. Two or three days after, the dead parts should be washed off; and if any more sinuses are discovered, they should be treated the same as the rest. If the bone be diseased, the rotten parts must be scraped off. The cure will be expedited also by cutting away any callous matter found within the lips of the external opening. When the wound is brought to a healing state, milder dressings will be proper, such as compound tincture of myrrh, green basilicon, &c. In slight cases, a seton needle, armed with a cord, passed through the tumour with proper digestive dressings, may answer. This disease is, however, almost always more or less tedious.

Pollack. See Cod.

POLLEN, in botany, the farina, or prolific powder, like fine meal or flour, contained in the anthers of flowers; when sufficiently mature, it is conveyed to the pistils for the purpose of fecundation. It is in general of a yellow colour, and very conspicuous in the tops of unripe flowers, especially lilies and tulips. It is from the pollen of flowers that the bees obtain *wax*.

POLYANTHES, a genus in botany, consisting of one species, the *tuberosa*, an herbaceous flowering perennial, of Java and Ceylon. There are varieties with a double flower; with striped leaves; and with a smaller flower; the last frequent in France. These plants are all highly ornamental, and, with care and shelter, can be reared in this country.

Polyanthus. See Primrose.

POLYGONUM, a genus of plants, consisting of forty-two species, scattered over Europe, Asia, and America, of which ten are common to our own country. The *bistorta*, or Bistort; the *orientale*, Persicaria, or Arsmart; the *auriculare*, or Knot-grass; and the *fagopyrum*, or Buck wheat, are the chief. See these articles in the order of the alphabet.

Poly-mountain. See Germander.

POLYNEME, or *Polynemus*, a genus of fishes, consisting of four species; three inhabitants of America, one of the Pacific Ocean. They are chiefly distinguished from the genus *gurnard*, in having the ventral fins placed on the abdomen, and in the appendages not being articulate. The chief are

The *Paradiseus*, or Mango fish,, which is of a yellow colour, resembling that of a ripe mango, whence its specific name. From twelve to fifteen inches long; inhabits the Indian and American seas; flesh at Calcutta accounted delicate.

The *Plebeius*, or Grey polyneme, has the general appearance of a mullet. Inhabits the Pacific ocean.

The *Niloticus* is found in the Nile, and grows to a large size, thirty pounds or upwards, according to Mr. Bruce.

POLYPODY, or *Polypodium*, a genus of ferns, consisting of seventy-six species, five indigenous to this country. The following are most worthy of note.

The *Vulgare*, or Common polypody, having linear, oblong, obtuse, slightly serrate, not scaly segments; it grows on walls, shady places, and at the roots of trees.

The *Quercinum*, or Oak polypody, was employed by the ancients medicinally, and, till lately, was in the materia medica, but it is of little importance.

The *Filix mas*, or Male fern, was till lately arranged under this genus, but the best authorities seem to consider it a species of *aspidium*. See Fern, the Male.

POLYPUS, Polype, or *Hydra*, in zoology, a genus of the class worms: an animal fixing itself by the base, linear, gelatinous, naked, contractile, and furnished with setaceous tentacles, inhabiting fresh waters, and producing its deciduous offspring, or eggs, from its sides. Five species, three of which are common to the waters of our own country; the chief is the *viridis*, having about ten tentacles, shorter than the body. It inhabits stagnant waters generally, on the under surface of plants, and appears like a little, transparent, green jelly, when contracted and quiescent; when expanded, it is a linear body, fixed at one end, and surrounded at the other by tentacles or arms, placed in a circle round the mouth. The whole tribe has a wonderful facility of reproducing parts which have been destroyed; and if cut and divided in any direction, each separate part becomes a perfect polype.

POLYPUS, a pendulous, fleshy, indolent tumour, so called from its supposed resemblance to the animal of that name. It is found in different cavities of the body, chiefly in the nose, mouth, throat, outer passage of the ear, the vagina and rectum. Some are soft and compressible, others extremely firm;

the soft kinds shrink and contract in a dry atmosphere, the firm are not affected by the weather. Their colour is commonly pale and transparent; sometimes a deep red. They most frequently arise from local injury, or whatever tends to produce and support an inflamed state of the part. They sometimes, unless extirpated, degenerate into cancer. The soft kind are seldom painful, and may be removed at any period with little danger, but the hard kind are not only painful, but more apt to become cancerous.

As long as they remain stationary they are not to be touched; but when they continue to grow, astringent applications, such as a strong solution of alum, a decoction of oak bark, vinegar, ardent spirits, &c. may be applied; caustic, and other corroding applications have been of use in the softer kinds, though they have not produced a cure. The knife, scissars, forceps, or ligature, is the most effectual practice, and these several operations will be, and ought to be, performed by the experienced surgeon.

POMADE DIVINE, an elegant ointment, made thus: Take of beef marrow thirty-six ounces; of rose water three fluidounces; of gum benzoin bruised, storax, and powdered orris root, of each one ounce and a half; of nutmegs, bruised, one drachm and a half; of oil of cassia twenty drops; of oil of cloves forty drops. Break the marrow into small pieces, and let it soak in three pints of water for six days, changing the water every day. Then strain off the marrow, and mix with it the rose water, and also the benzoin, storax, orris root, and nutmegs. Boil the whole together in a water bath, in a vessel well stopped; and in about three or four hours let the pomade be strained off through a coarse linen cloth; after which add the essential oils.

Pomade divine is a useful application to sore nipples, chapped lips, and other similar sores.

POMATUM, an ointment, consisting of lard, rose-water, and some aromatic oils. The best way to make pomatum, is to melt the lard and pour it into a vessel which will hold considerably more than the quantity which is wanted. To the melted lard add the rose-water, about two ounces to a pound of lard will be sufficient; beat the rose-water and lard well together with a wisp, such as is used by clothiers, &c. till it begins to grow cold, when the scent is to be added, and the whole poured out into a proper pot or pots for use.

The pomatums usually sold for renovation of the hair, are mere impositions.

POME, in botany, a pulpy pericarp, without valves, containing a capsule. All the moist fruits, which have the seeds lodged in a core, as apples, pears, quinces, &c., are pomes.

POMEGRANATE TREE, or *Punica*, a genus, consisting of two species, as follow:

The *Granatum*, or Common pomegranate, with an arboreous stem, eighteen or twenty feet high, armed with a few thorns; leaves lanceolate; flowers terminal, scarlet; fruit a pome-berry, size of an orange, covered with a hard, coriaceous rind, including a red succulent pulp which is pleasantly acid, resembling that of the orange; it is cooling, useful for quenching thirst, and gently aperient. A native of the South of Europe. The bark or rind of the fruit is used medicinally.

The *Nana*, or Dwarf pomegranate, has a shrubby stem, five or six feet high, with linear leaves; flowers smaller than the preceding; fruit the size of a nutmeg, with little flavour; a native of the Antilles.

Both sorts are cultivated, and may be best increased by layers; the former will bear the external atmosphere, but thrives best against a wall; the second requires the warmth of a green-house.

The *flowers*, and rind, or *peel*, of the common pomegranate, are both astringent, and are given in decoction, in chronic and colliquative diarrhœa, and the protracted stage of dysentery. The decoction is also used as an injection in fluor albus, or a gargle in sore throats, after the inflammation is moderated. The bark and flowers are also given in the form of powder, in doses of from half a drachm to one drachm; of a moderately strong decoction, six fluidrachms may be given every three hours.

Pompholyx. See TUTTY.

Pond. See FISH-POND.

POND-WEED, or *Potamogeton*, a genus of plants, comprehending thirteen species, almost all of them common to the streams, ponds, &c. of our own country. The leaves of this genus float upon the surface of the water.

Ponderous spar. See BARYTES.

POOR, an appellation given to persons whose situation is so reduced as to render them chargeable to the parish.

Till the reign of ELIZABETH, the relief of the poor in this country, was confined to the operation of individual benevolence, and other benefactions from the monasteries, and religious houses. But the act of parliament the 43rd of Eliz. appears to have laid the foundation of those laws which have increased in number, in the same ratio as the increase and necessities of the poor, so that at the present time, nearly eight millions sterling are collected annually for their support. Whereas in the year 1776, the total expenditure on account of the poor for one year, was only 1,530,804l. 6s. 3d. In fact, the poor laws are at present, and, we believe, we may assert ever have been, expedients for supporting that artificial system of society, which, if it have not reached its acme in this country, has, at least, reached a state from which it is difficult to depart without mischief, and to continue in which much longer is, we fear, impossible.

It is impossible for us, in the limits to which we are restricted, to enumerate the various laws passed even during the late reign relative to the poor. Nor can we notice the innumerable projects and expedients which have been presented to the public, for the improvement of the condition of the poor, and the reduction of the poor's rate. It appears to us, however, that any plan which does not provide for the proper *education* of the poor, and which does not furnish them with various, wholesome, and moderate employment, much of which should be in the open air, is not only inexpedient but mischievous; and, therefore, the work-houses, poor-houses, and houses of industry, so common in various parts of the kingdom, are not those means which can effectually relieve the poor, and remove them from their wretched and degraded situation; nor can they, nor do they tend to remove that load of taxation with which the other classes of society are so greatly burthened to support them. And after all, what sort of support, we would ask, great as the general burthen is, do the generality of the poor receive? Do not too many of these poor creatures pass

In maddening pain life's feverish dream?

And does not every benevolent mind weep over the degradation, the vice and the misery to which such persons are continually exposed? The spirit of individual independence, so useful for individual well-being, is obliterated, the moral sense rendered obtuse, or, more commonly, never excited, immoralities start upon us at every corner, and hideous crimes fill our prisons with victims, the wretched effects of such a system.

It is admitted on all hands, that something is necessary to be done; but too many are obliged to exclaim, who will show us any good? for project after project, and expedient after expedient, with acts of parliament to boot, has not succeeded. The chief requisites it must not, however, be forgotten, in any plan for the melioration of the poor, are BENEVOLENCE, AFFECTION, KINDNESS. Such must be our animating principles, and neither sect, party, nor religion, must operate to shut us out from these all-pervading and extensive guides for human action. And if every one who has the means, will in good earnest adopt them, and do his utmost, we cannot doubt of the result. Their influence must soon become wide as the world, and general as the day.

Whether the plans of Mr. ROBERT OWEN are such as promise the most effectual relief for the poor of these realms, must be left to the public to determine; but, believing as we do, that they are by far the best which have hitherto appeared, and that they are neither visionary nor impracticable, we advise a more deliberate attention to them, than they have yet obtained.

We cannot quit this subject without observing, that some laws, making considerable innovation on those relative to the poor, passed the legislature in the year 1819. They give to persons rated to the poor, votes in proportion to the amount at which they are rated; they enable parishes to establish select vestries; to appoint an assistant overseer; to build, or enlarge work-houses; to provide land for the employment of the poor; to rate *owners* of houses, the rent of which is not less than six, nor more than twenty pounds a year, to the poor instead of the *tenant*, &c. &c. But as most of these enactments are at the option of the inhabitants, or the select vestry of a parish, we have not heard, nor do we believe, that many, if any of them, are now acted upon.

Poor-house. See COTTON-MILLS, EMPLOYMENT, HOUSES of INDUSTRY, and POOR.

Poor man's pepper. See PEPPERWORT.

Popinjay. See PARROT.

POPLAR, or *Populus,* a genus of trees, comprehending twelve species, natives of Europe and America, four of our own country. They are all cultivated for ornament or use, and are as follow:

The *Alba,* or White poplar, found wild in our woods, tall, straight, with a smooth whitish bark; leaves heart-roundish, white-downy underneath. There are two varieties: the Great white poplar, abele, or abbey; and the Common white poplar.

The *Tremula,* Trembling poplar, asp, or aspen, is found wild in our woods; its leaves trembling with every breath of wind.

The *Nigra,* or Black poplar, found in watery places in our own country, and other parts of Europe. Its inner bark is used by the inhabitants of Kamschatka, for bread; and the downy cotton of its seeds has been sometimes employed for paper.

The *Dilata,* or Lombardy poplar, approaches the cypress in the compressed form of its growth; a native of Lombardy. *Fashion* has latterly fixed a stigma upon this tree, which it does not deserve. It is now become very common it is true, but it is, nevertheless, a very ornamental tree, and, we believe, as little injurious by its foliage as its shade; indeed, much less so than most other trees.

The *Balsamifera,* or Tacamahac, a native of America and Siberia. It secretes a gum, supposed by some to be the *tacamahac* of the shops.

The *Candicans,* or Heart-leaved tacamahac poplar; a native of Canada, secreting also a resinous gum.

The *Lævigata,* or Smooth poplar, a native of North America.

The *Monilifera,* or Canadian poplar, is indigenous to Canada, and flowers in May.

The *Græca,* or Athenian poplar, has broad leaves, a native of the Archipelago.

The *Heterophylla,* or Various-leaved poplar, is a large tree, having numerous branches, and broad leaves; a native of Virginia and New York.

The *Angulata,* or Carolina poplar, is covered with a light green bark; a large tree, native of Carolina.

The *Canescens,* or Hoary poplar, with large roundish leaves, hoary underneath; found in watery places of our own country.

They may all be increased by cuttings, layers, or suckers. Most of the species may be usefully employed in dyeing, yielding to wool a good neat fawn, nankin, and similar grave colours, according to the quantity of wood employed, and the length of time which it is boiled.

The woods of the different poplars are used for various purposes. That of the black poplar, not being apt to splinter, is used by turners; and it is also used for rafters, poles, and railing; and for flooring in some counties. Their general character is, however, soft and porous. A woolly substance is produced in the upper part of the seed vessels of these trees, which has been mixed with cotton, and made into gloves, stockings, &c.; and with hare's fur into hats.

POPLES, in anatomy, the ham, or under part of the joint of the knee.

POPPY, or *Papaver*, a genus of plants, comprehending twelve species, chiefly natives of Europe, six of the corn-fields and wastes of our own country. The most important are the following:

The *Somniferum*, or White poppy, calyx and capsules glabrous; leaves clasping the stem: supposed to be originally from Asia, but now found growing wild in the southern parts of Europe, and even, it is said, in England. There are several varieties, differing in their colour, and multiplicity of their petals, which are sown in gardens for ornament. The single-flowered white kind, with large capsules, are those propagated for medicinal use, and from which in Turkey, opium is obtained. See below, and also OPIUM.

The *Rhoeas*, Corn, or red poppy, has a glabrous capsule, nearly globular; stem many-flowered, bristly; abounding in corn-fields; the flowers are red, and occasionally used medicinally. See below.

The *Cambricum*, or Welsh poppy, has glabrous capsules, and a many-flowered stem, with a few ascending hairs; flowers large, yellow; indigenous to the stony mountains of Great Britain, and especially of Wales.

The *Orientale*, or Oriental poppy, has glabrous, globular capsules; stems one-flowered, leafy, rough, with close-pressed bristles; leaves pinnate, serrate, with bristly hairs, flowers red; a native of Armenia; flowers with us in May.

The milky juice of the *somniferum*, or White poppy, in its more perfect state, which is the case in warm climates only, is extracted by incisions made in the capsules, and inspissated, and forms the *opium* of commerce. The plants, during their growth, are carefully watered and manured, the watering being more profuse as the period of flowering approaches, and until the capsules are half grown, when they are discontinued, and the collection of the opium commences. At sunset, longitudinal incisions are made upon each half-ripe capsule, passing from below upward, and not penetrating to the internal cavity. The night dews favour the exudation of the juice, which is collected in the morning by old women and children, who scrape it off from the wounds with a small iron scoop, and deposit the whole in an earthern pot, where it is worked by the hand, in the sun-shine, until it obtain a considerable degree of spissitude. It is then formed into cakes, which are laid in earthen basins, to be further dried, when it is covered over with certain leaves, and is the opium of the shops.

In cultivating the poppies for opium in this country, they have been sown in three different ways. The first broadcast, upon beds three feet wide, with an alley between, and thinned out to the distance of four or five inches. The second on beds three feet wide, in rows six rows to a bed, and six inches between the plants. And the third, on the spaces between rows of early potatoes, four feet wide; two rows of poppies to each space; twelve inches between the rows of poppies, and eight inches between the poppy plants: three feet between each double row of poppies occupied with a row of potatoes. This last is said to be the best method.

A valuable paper on the method of collecting opium from the white poppy in this country, will be found in the 16th number of the *Journal of Science, &c.* by the Rev. Mr. SWAINE. After being provided with a suitable cup, &c. for the reception of the juice, and a lancet blade, which is to be held between the finger and thumb, the operator is to make a slight incision horizontally, about a quarter of an inch below the upper part of the bulb of the capsule, and about an inch in length, taking care just to penetrate through the cuticle *into* the *cellular tissue*, but not *through* it into the hollow part of the capsule. He then, as speedily as possible, makes a second incision, in the same direction, one-fourth of an inch below the first, and a third at the same distance below the second. He then proceeds to a second capsule, a third, and so on, till he sees the milky fluid on the first, nearly ready to drop; when he is to return to that and scrape off the juice which has exuded. He then proceeds to other capsules, collecting the juice in the same way. When the day's work is ended, the collected juice is to be put into a deep earthen-ware plate, which must be placed in some dry out-house with a paper cover, to guard it from dirt, &c. When a quantity is collected, sufficient to make a loaf, or cake, it must be either exposed to the sun's heat in the middle of the day, when the weather is fine ; or, which is the safer way, be removed to a stove or kitchen, or some warm and dry room, where a constant fire is kept, and be well worked up together, and with a knife turned daily till it requires sufficient consistence to be moulded into any form required ; after which it must be turned frequently till it is sufficiently dry.

The operation may be performed by women and persons advanced in life, as it is not laborious : it is said that opium thus procured, is of very good quality.

The *seeds* of white poppies may also be used for the production of a very valuable oil. It appears by a paper of Mr. YOUNG, in the *Edinburgh Philosophical Journal*, No. III, that 86lbs. of seeds produced 32lbs of oil. After the opium harvest is over, the seeds will be ready for gathering about the end of August. It is advisable to extract the oil as soon after the harvest as possible, as they then yield the largest quantity.

The first oil, which is of a pale colour, is drawn cold, and is used for the same purposes as salad oil. The cakes are afterwards heated, when a considerable quantity, of an inferior quality, is obtained, by pressing them a second time. This last is of a deeper colour, and applicable to all the purposes of the more common oils. It preserves the colour of some kinds of paint better than the other drying oils, and is free from their disagreeable smell.

An *extract*, a *decoction*, and a *syrup of white poppy heads* are ordered by the London College.

The *extract* of white poppy heads is made thus : Take of dried white poppy heads, freed from the seeds, and broken in small pieces, one pound ; boiling water a gallon. Macerate for twenty-four hours ; then boil down to four pints ; strain the hot liquor, and evaporate to a proper consistence.

This extract possesses nearly the same properties as opium, but in a much weaker degree ; and is less apt to occasion the nausea, head-ach, and delirium which opium not unfrequently produces. It is therefore to be preferred, for procuring sleep, in diseases in which the head is much affected. The dose is from two grains to one scruple, given in the form of pills.

The *Decoction* of white poppy heads, is made by boiling four ounces of the dried and broken heads, and four pints of water, for a quarter of an hour, and straining. In making this decoction the seeds should not be rejected, as the oil increases the emollient quality of the decoction.

This is a very useful fomentation in painful swellings, in the excoriations produced by the acrid discharge of ulcers, and those common to infants.

The *syrup* of white poppies is made thus : Take of dried white poppy heads, broken in small pieces, and freed from the seeds, fourteen ounces; refined sugar two pounds ; boiling water two gallons and a half. Macerate the heads in the water for twelve hours ; then boil it down, in a water-bath, to one gallon, and strongly express the decoction. Boil the liquor again down to two pounds, and strain it while it is hot. Set it aside twelve hours that the fæces may subside. Add the sugar so as to form a syrup.

Syrup of white poppies is a useful medicine for allaying the violence of the cough in catarrh, and for easing pain, and procuring sleep in children's diseases. It is, however, very often uncertain in its operation. The dose is from one fluidrachm to half a fluidounce, according to the age of the patient.

A *syrup of the red poppy* is made thus: Take of the recent petals of the corn, or red poppy, one pound; of boiling water eighteen fluidounces; refined sugar one pound and a half. To the water, heated in a water-bath, add gradually the petals of the poppy, stirring them occasionally; then, having removed the vessel, macerate for twelve hours; press out the liquor, and set it aside that the impurities may subside; lastly add the sugar, so as to make a syrup.

The medicinal virtues of this syrup are of no importance; it is valued chiefly for its fine rich colour. Mixed with the juice of lemons, it is often sold for the syrup of mulberries.

Poppy, the horned. See CELANDINE.

POPULATION, the whole number of the people of any state or place.

The population of Great Britain was long a subject of great uncertainty, both with respect to the actual number of inhabitants, and their increase or diminution. But the enumeration of the people, according to Acts of Parliament, in 1801 and 1811, has removed in a great measure, the doubts which before existed upon this subject.

By the last returns, viz. 1811, the population of

England was	9,855,400
Wales	632,600
Scotland	1,865,000
Total	12,353,000

Ireland has been usually estimated at about 5 millions; and we think there can be little doubt, from the increase in the population of Manchester, Glasgow, and other manufacturing towns, since the last census, that the whole number of the inhabitants of the British Isles is now eighteen millions.

The following are the numbers by the last enumeration, in the chief towns of Great Britain:

London	1,050,000
Manchester	98,573
Liverpool	94,376
Birmingham	85,753
Bristol	76,433
Leeds	62,534
Plymouth	56,060
Portsmouth, Portsea, and Gosport	48,355
Norwich	37,256
Deptford and Greenwich	36,780
Sheffield	35,840
Nottingham	34,253
Bath	31,496
Newcastle upon Tyne	27,587
Kingston upon Hull	26,792
Leicester	23,146
Chatham and Rochester	21,722
Edinburgh	102,987
Glasgow	100,749
Paisley	36,722
Dundee	29,616
Aberdeen	21,659

POPULNEON, or POPULNEUM, an ointment made by boiling equal parts of lard and poplar leaves, bruised, till they become crisp. Sometimes other vegetable leaves are added, such as lettuce-leaves, and the leaves of houseleek, &c. But the place of this ointment is now generally supplied by the ointment of elder; neither are better than, if so good as, mere lard.

PORCELAIN, or CHINA, as it is commonly called, is a species of earthenware, composed of materials which resist complete fusion, in a very considerable heat, but has been brought, by a less heat than its melting point, to a state of incipient fusion, and is thereby rendered extremely hard, sonorous, and semi-transparent; and possesses a semi-conchoidal splintery fracture, approaching that of glass. This last forms a distinctive character between porcelain and pottery; for the fracture of pottery is extremely granular.

The most perfect and beautiful porcelains of Japan and China are said to be composed of two distinct earths, one of which is called *Petuntz*, most probably a species of feldspar, and which melts in a strong fire, and another which is infusible by itself: by the union of these two earths a porcelain is produced, which scarcely vitrifies at the utmost furnace heat which art can excite. It is also very hard, beautifully semitransparent, very white when not artificially coloured, tough and cohesive, so that it may be made very thin, and bears sudden heating and cooling without cracking.

Of the beautiful European porcelains, made in imitation of the oriental, it does not appear that any of them unite all its excellencies: its chief superiority, however, appears to be only in its absolute infusibility. This defect in the European porcelain, for the common uses of it, is certainly unimportant.

The art of forming mixtures for porcelain, in this country, is, comparatively, in very few hands. The late Mr. WEDGEWOOD, carried it to considerable perfection at Etruria, in Staffordshire, where, as well as at Stoke upon Trent, Worcester, and Coal-port, this elegant manufacture is now carried on. See FELDSPAR and FLINT.

For a cement for *broken china*, see CEMENT, and LAC.

PORCUPINE, or *Hystrix*, a genus of quadrupeds, consisting of five species, distinguished by two fore-teeth cut off obliquely; grinders eight; toes four or five; body covered with spines, or quills, and hair. They are as follow:

The *Cristata*, or Crested porcupine, of which there are three varieties, has a long crest of stiff bristles on the top of its head, reclining backwards; the quills on the hind parts of the body nine inches long, very sharp at the ends, and varied with black and white; between the quills a few hairs; head, belly, and legs covered with strong bristles, terminated with soft hair of a dusky colour; whiskers long; ears like those of the human body; length about two feet; the tail also covered with quills, only four inches. Inhabits India, southern Tartary, Persia, Palestine, and all parts of Africa; it is also found wild in Italy and Spain, and is bought in the markets of Rome for the table; but the Italian porcupines have shorter quills and a less crest than those of Africa and Asia. It is harmless; lives on roots and vegetables; sleeps by day, feeds by night; digs large burrows, divided into many compartments; brings from two to four young; easily tamed; when attacked retires, and runs its nose into a corner; rolls itself up, erects its spines, opposes them to an assailant, and makes a kind of grunting noise; but the story of darting its quills is fabulous. Some of these animals produce bezoars.

Of the *Prehensilis*, or Brasilian porcupine, there are three varieties, all distinguished by their long prehensile tails; body fifteen inches long; inhabits Mexico and Brazil; climbs trees, but slowly; grows very fat; flesh white and good; it may also be tamed.

The *Mexicana*, or Mexican porcupine, has a prehensile tail; body eighteen inches, tail nine inches long; easily tamed; colour dusky; inhabits Mexico.

The *Dorstata*, or Canadian porcupine, inhabiting North America, consisting of two varieties, one of which is white, laps like a dog, eats snow in winter instead of drinking; size of a hare; tail not prehensile;—and the *macroura*, or Long-tailed porcupine, having the tail as long as the body, and inhabiting the islands of the Indian ocean, make up the tribe.

PORK, the flesh of hogs, killed for culinary purposes. As aliment, pork is not to be estimated very highly. See ALIMENT and HAM.

PORPHYRY, a very extensive genus of massive, unstratified, primitive rocks, above sixty species of which have been enumerated. Its essential constituent is feldspar; and genuine porphyry may be defined as massive feldspar, containing embedded crystals of the same substance. The colour of porphyry, which is usually reddish, brown, and green, is principally derived from the base, or paste including the crystals. The common aspect of porphyry is that of blocks and masses, not very unlike some of the varieties of granite, but its fragments are generally smaller, and are in a more decaying condition. Porphyry is an extremely durable material for architectural purposes, and as such was highly esteemed by the nations of antiquity. It is met with in many parts of Great Britain; and in the north the porphyry districts are of singular grandeur, as at the base of Ben Cruachan, on the banks of the Awe; and amidst the precipices of Ben Nevis, the highest of the British mountains. The British porphyries are many of them of great beauty, and might well be substituted for the more rare and expensive foreign varieties. See MARBLE.

Porpoise. See DOLPHIN.

PORRIGO, a disease very common among children, in which the skin of the hairy part of the head becomes dry and callous, and comes off like bran upon combing the head. See DANDRIFF and INFANCY.

Port-wine. See WINE.

PORTA, in anatomy, that part of the liver where its vessels enter.

Porter. See BREWING.

PORTLAND POWDER, a remedy for the gout, consisting of equal parts of round birthwort root, gentian root, the tops and leaves of germander, ground-pine and centuary dried, powdered, and mixed together, the dose of which was one drachm, taken every morning fasting, in a glass of wine and water, tea, or any warm liquid; but it is now fallen into disuse.

PORTLANDIA, a genus of plants, consisting of four species, natives of the West Indies, or America, of which the *grandiflora*, or Great-flowered portlandia is the chief. It has large axillary and beautifully white flowers, most fragrant in the night: a native of the West Indies; and flowering in July and August; it may be raised from seeds or cuttings, but requires the heat of a stove.

Portland stone. See LIME.

POSSE COMITATUS, in law, the power of the county, or the aid and assistance of all the knights, gentlemen, yeomen, labourers, servants, and apprentices, &c. and all others within the county, that are above the age of fifteen, except women, ecclesiastical persons, and such as are decrepit and infirm. The posse comitatus is to be raised where a riot is committed, a possession kept upon forcible entry, or any force of rescue contrary to the king's writ, &c. The posse comitatus is rarely, if ever, at the present time, called out.

POST, that method for the conveyance of letters from one place to another, adopted by government as a means of revenue.

For the postage of any single letter from a post-office in England or Wales, to any place, not exceeding 15 miles from such office, 4d. is to be charged; above 15 miles, and not exceeding 30, 5d.; above 30, and not exceeding 50, 6d.; above 50, and not exceeding 80, 7d.; above 80 and not exceeding 120, 8d.; above 120 and not 170, 9d.; above 170 and not exceeding 230, 10d.; above 230 and not exceeding 300, 11d.; above 300 and not exceeding 400, 12.; above 400 and not exceeding 500, 13d.

The postage of a letter going from one part of London to another, is 2d. or to or from one part of the country within the limits of the two-penny post is 2d. But a letter from London to the country, or from the country to London, within the limits of the two-penny post, is 3d.

The postage of all foreign letters put into the post-office, must be paid for, or they will be opened and returned to the owner.

POTASH, or POTASSA, an alkali usually obtained from the burnt ashes of vegetables, by combustion or evaporation in iron or other pots, whence its name.

The potash of commerce is of various qualities. In general, its purity may be easily judged of, by its easy solubility in water, two parts of which should entirely dissolve one part of the salt; the residue, if any, consists of impurities.

Potash is found in commerce under two names: the whitest is usually called *pearl-ashes*, another kind, which is of a darker colour, inclining to dirty red, is called *pot-ashes;* the last is often considerably more caustic than the first. Both absorb moisture rapidly from the air, so that they cannot long be exposed to it without losing their dry, powdery state. They have a burning urinous taste.

Potash, in its rough state, is prepared by burning wood, or other matter till it is reduced to ashes; the ashes are then repeatedly washed with fresh waters till the liquid comes off perfectly tasteless. The liquids thus obtained, are evaporated, and the salt left behind is potash. If this substance be exposed to a red heat, many of the materials which are mixed with it are driven off; what remains is much whiter, and on account of its colour it is called pearl-ash. In this state it is deemed sufficiently pure for the ordinary purposes of life, though by no means adapted for the experimental chemist: it is an impure carbonate of potash.

Potash is made in this country; but the best is brought from America and Russia. According to the experiments of VAUQUELIN, 1152 parts of *Russian potash* contain, of potash 772 parts; sulphate of potash 65; muriate of potash 5; insoluble residue 56; carbonic acid and water 254. And 1152 parts of *American potash* contain, of potash 857 parts; sulphate of potash 154; muriate of potash 20; insoluble residue 2; carbonic acid and water 119. 1152 parts of *American pearl-ash* contain, of potash 754 parts; sulphate of potash 80; muriate of potash 4; insoluble residue 6; carbonic acid and water 308.

Potash is used for innumerable purposes in the arts: from the ease with which it combines with oleous and greasy matters, it is used extensively in washing, and other purifications of clothing. It combines with all the acids, and many other bodies, forming various compounds, some of them of the greatest value and use. See NITRATE OF POTASH.

The chemical composition of this substance is curious and important. Till the year 1807, pure or caustic potash was supposed to be a simple body; but, by submitting it to the action of galvanic electricity, Sir HUMPHRY DAVY discovered that the basis of potash was a metal, to which the name of *potassium* has been given. It is white, and of great lustre; it instantly tarnishes by exposure to air; it is ductile, and of the consistency of soft wax; its specific gravity is 0,85; at 150° it enters into perfect fusion; and at a bright red heat, rises in vapour; at 32° it is hard, brittle, and solid; if heated in air it burns with a brilliant white flame; it is an excellent conductor of electricity and of heat. When thrown into water it instantly takes fire; hydrogen gas is evolved, and *oxide of potassium*, or potassa, is found dissolved in the water. It appears, therefore, that caustic potash is a compound of potassium and oxygen.

Various preparations of potash are ordered by the London College; the following are the chief:

Subcarbonate of potash, commonly called *salt of tartar, salt of wormwood,* or *prepared kali.* Take of impure potash *(pearl-ashes)* reduced to powder, three pounds, boiling water three pints and a half. Dissolve the potash in the water and filter; then pour the solution into a clean iron pot, and evaporate the water with a gentle heat, until the liquor thickens; lastly, withdraw the fire, and stir assiduously with an iron or wooden spatula, until the salt concretes into small grains.

A purer subcarbonate of potash may be prepared in a similar manner, from tartar, previously burnt till it is of an ash colour.

This salt deliquesces in the air, it must, therefore, be kept in well-stopped bottles. Its taste is acrid and urinous; it changes to green the vegetable blue and red colours, combines with oil, and forms soaps, and is decomposed by acids with effervescence.

Subcarbonate of potash is deobstruent, diuretic, and antacid. Its effects on the kidneys are considerable when aided by plentiful dilution. Its principal use is for the formation of *saline draughts*, for which purpose it is given in combination with a solution of citric acid, or with recent lemon juice, in the proportion of one scruple of the salt to four fluidounces of lemon juice, in febrile affections; from one to two ounces of this mixture may be taken for a dose. When given as an antacid, the taste and acrimony of subcarbonate of potash is best covered with milk; its dose for such purpose is from ten grains to half a drachm.

Carbonate of potash. Take of pure subcarbonate of potash two parts; water three parts. Dissolve the salt in the water, and by means of a proper apparatus, throw it into a stream of carbonic acid. Filter the solution when it ceases to absorb the acid, and evaporate it by a heat not exceeding 180°, that crystals may form.

This is preferable to the common subcarbonate, for effervescing draughts, but does not differ from it in its properties as a remedy.

Tartrate of potash is a valuable purgative, operating easily, and without griping; and even corrects the griping properties in senna, and other resinous purgatives. The dose is from one drachm to one ounce, dissolved in water.

Water of super-carbonate of potash is one of those acidulous waters which are prepared in the large way in this metropolis, and so much in fashion. It may be prepared on a small scale, by the apparatus of **Nooth.** Two scruples of subcarbonate of potash, dissolved in a pint of water, is about the usual proportion, but a less proportion of the alkali will render the taste of the water more agreeable. The more carbonic acid can be combined with it the better. It is scarcely necessary to add, that it must be kept in a cool place, in bottles well stopped.

It is tonic, diuretic, and antacid; it is also regarded as lithontriptic; and is beneficial in dyspepsia and gout; it forms, with lemon juice, an effervescing draught, preferable to that prepared with the carbonate.

Sulphate of potash is deobstruent and cathartic. It is given with great advantage in the visceral obstructions of children; and in combination with rhubarb and aloes, in jaundice, and dyspeptic affections. It is generally given in powder, from its sparing solubility in water. The dose is from ten grains to one drachm, according as it is intended to act, as a deobstruent or purge.

Solution of potash. Take of subcarbonate of potash a pound; of lime fresh burnt, half a pound; boiling distilled water, a gallon. Dissolve the subcarbonate of potash in two pints of the water. Add the remainder of the water to the lime, mix the hot liquors together, then set the mixture aside in a covered vessel, and when cold, let it be strained through a cotton bag. If on the addition of any diluted acid, effervescence be excited, more lime must be added, and the filtration repeated. A pint of this solution ought to weigh sixteen ounces. It is inodorous, and so caustic, that it does not admit of being tasted. It is limpid, dense, and has an oily appearance when agitated. It does not effervesce with acids; and feels soapy when rubbed between the fingers, in consequence of its dissolving the scarf-skin.

As a solvent of calculus, both in the kidneys and bladder, this solution has long been celebrated; it acts, however, only on calculi, composed of uric acid, or urate of ammonia. See **Gravel** and **Stone.** But its continued use is said to debilitate and otherwise injure the stomach. It has also been used internally in leprosy. The dose may be from ten drops to half a drachm, taken in chicken broth, milk, or almond mixture; or, in cases of acidity of the stomach, in bitter infusion. Externally, it is used much diluted in the form of lotion, to the joints, in rickets, and gouty swellings; and in its concentrated state as a caustic to destroy the poison of rabid or venomous animals.

Potash with lime, and *fused potash*, or *infernal stone*, are both powerful caustics; and if taken, even in small doses, internally, destructive poisons. In the application of fused, or concrete potash, externally, as a caustic, to prevent inconvenience from its deliquescent nature, the skin should be covered with a piece of calico, spread with adhesive plaster, and having a hole in its centre, sufficient to bare the part only, where it is intended to be applied.

For other preparations of potash, see SOAP, SULPHUR, and VINEGAR.

For the treatment of persons who have taken potash, or any of its preparations as poisons, see ALKALIES, and POISONS.

Potassium. See POTASH.

POTATOE, or *solanum tuberosum*, a plant with a root of the same name, too well known to need description. It is said to be originally a native of America; and that it was first introduced into Ireland, and subsequently into England, about the commencement of the seventeenth century. See NIGHTSHADE.

The cultivation of this highly valuable vegetable has rapidly increased within the last twenty years, so that it may now be considered as standing next to wheat, in respect to human vegetable food.

Although the varieties of this plant are numerous, and continually increasing, in consequence of their being raised from seed, there does not appear to be more than two distinct kinds, the red-rooted, or that which bears a purple flower, and the white-rooted, or that which has a white flower.

The *early white* and *black kidney* potatoes are well known; the *old winter red*, is an excellent variety for the table in the spring. The *blacks* likewise are a sort which keep well till about August. But almost every county and district has its peculiar kinds, which, of course, we cannot enumerate; as cattle potatoes, the *ox-noble* and the *cluster*, are the varieties principally cultivated, being both large in size and very productive.

The soil in which this root is capable of being produced to the greatest advantage is a rich loam, of the light sandy kind, which possesses a medium degree of moisture. They may, however, be grown with success on lands that are much stronger, where proper attention is bestowed in their culture. They also succeed in soils of the peat-moss kind. But in every kind of soil it is necessary that they should be dry, stagnant moisture being injurious to them.

Whatever be the nature of the soil in which the potatoe is planted, it should be reduced by the operation of the plough, spade, or harrow, into as fine and mellow a condition as possible.

As the potatoe forms its produce below the ground, it can be but in few cases cultivated with advantage without manure; and in close and wet soils, stable dung, in its long and littery condition is best for this purpose. When such manure cannot be obtained, old thatch, the strawy litter from the fold-yard, or any similar material, may be employed. But in light soils, dung in its more rotten state may be used. The dung of pigs is also a very good manure for the potatoe.

Potatoes ought always to be planted in rows, whether in fields or gardens, and there ought to be a distance of from twenty to thirty inches between each row, so that the fibres, which nourish the plants, may not be disturbed by the hoeing.

In the choice of potatoes, for the purpose of planting, it is necessary to attend to the differences in the varieties in respect to forwardness, their qualities as food for man or cattle, and the variation in their productiveness: for some potatoes will thrive well in one soil but not in another. We have known a soil in which the black kidney would thrive well, when the early white kidney was totally unproductive. It is generally recommended, that the sets or cuttings should be taken from such potatoes as are of the finest and most perfect of their kinds; and it may be also advantageous to take the seeds or sets from such varieties as have not been too long cultivated; as the continuing of the cultivation of the same kind, on the same soil, for a length of time, tends, not only to injure the quality, but lessen the quantity of the produce. On the whole, although many experiments have been made to raise potatoes from the eye buds and shoots alone, and other economical practices, yet cuttings, with an eye to each, having a due proportion of pulpy matter surrounding them for the support of the plant, in the early stage of its growth, is the best method. The quantity of seed or sets per acre, in general necessary, is from twenty-five to thirty bushels, when dibbled at ten inches distant in every direction; and from eight to twelve when every other furrow is planted at a foot from each set; and still less if at the distance which we have pointed out above, and which we believe to be the best method. When planted in drills, the dung should be laid at the bottom of the drill, and the sets placed upon it at about six inches distance. The plough is then to be run on both sides of each drill to throw the earth, which was raised out of it, upon the potatoes. The sets should not be planted more than four or five inches deep in the lighter soil, and in the heavier a still shallower depth is necessary.

In the after culture, repeated hoeings will be indispensable, both for the nourishment and increase of the produce of the plant, and to destroy the weeds.

Various opinions have been given relative to pulling off the blossoms of the potatoe, and cutting off some of the luxuriant stalks of the plant, but it seems to be decided that they prosper best by being left entirely alone. We believe, however, that the juice of the potatoe apples, when ripe, may be usefully converted into a vinous liquor, from which alcohol may be obtained. The stalk of the potatoe yields, on being dried and burnt, a considerable quantity of potash.

Potatoes are liable to be much injured by the *curl;* no satisfactory cause has, been yet assigned for this disease; although it is probable that imperfect culture, too early planting, cold, frost, and backward seasons, or other causes having a tendency to diminish the vigour of the plants, may render their leaves more suitable food for insects or other animalcula, and in this way the disease may be produced. No remedy appears to have been discovered for it; the best is a frequent change of seed, and that should be brought from a great distance; besides which, it may be advisable to have this kind of crop planted as little as possible on rich field or garden soils, which have been long in a state of tillage; these, of course, abounding most in insects.

The produce of this crop varies, from five to eight or ten tons per acre; the average of the whole kingdom is stated at about six tons per acre. In Kent, it is said, that six hundred and forty bushels per acre, have been occasionally obtained. But this is an extraordinary quantity.

Potatoes are most commonly *preserved* in this country through the winter, in heaps in the open air, formed in general by a hole being previously dug a foot or more below the surface of the ground, into which the potatoes are thrown, and afterwards heaped up in the shape of a cone; they are then thickly covered with straw, and thatched on the outside. We consider this a very bad method: for it frequently happens, that in a severe winter, large quantities of potatoes, in such heaps, are frozen, and consequently for the purposes of food, destroyed, although starch may still be obtained from them. A much better method would be to build square or circular mud-wall houses, without either door or window, and the floors of which should be raised one foot above the surrounding earth. The walls of such houses should be thick, not less than eighteen inches; two feet would be better. Their height and diameter must of course be determined by the quantity of potatoes to be preserved; but the potatoes ought not to be as high as the tops of the walls, by a foot at least. This vacancy should be filled with dry straw, closely trodden down, and a conical heap of straw and thatch should crown the whole, into which neither frost nor heat could readily, if at all, enter.

In conclusion, on the culture of the potatoe, it may, we believe, with safety be asserted, that this crop is most proper and advantageous as a preparation for wheat on the stiffer soils, and on the lighter for turnips, barley, &c. That although potatoes render the soil mellow, they rob it of much fertility, and, of course, should not be often repeated.

The uses of potatoes for fattening hogs, and feeding other animals, need not be insisted upon here.

Of potatoes as human food, it will be, however, necessary to say a few words.

According to Sir HUMPHRY DAVY, the quantity of soluble or nutritive matter in 1000 parts of the potatoe is from 200 to 260, of which from 155 to 200 parts are starch, from 15 to 20 saccharine matter, and from 30 to 40 gluten. This proportion is much lower than that of any of the grains or pulse; but potatoes contain considerably more water than any of those; and, deducting the extraordinary quantity of water, perhaps two-thirds of their weight, the nutritive properties of the potatoe, are not of mean estimation. If it be desired to retain all these, steam offers the best method for effecting it; and if potatoes be used for bread, they ought most unquestionably, also, to be prepared by *steam*. But for the valetudinarian and dyspeptic, they should be *boiled in water*, the water extracting their saccharine matter, on which their fermenting properties chiefly depend.

Potatoe bread. See BREAD.

Potatoe oat. See OAT.

Potential cautery. See CAUSTICS.

POTTLE, a liquid measure, containing four pints. In London it denotes a little tapering basket for strawberries and other delicate fruits, but of no precise dimensions.

POULTICE, an external application, employed for promoting the suppuration of tumours, or abating painful inflammation; it is sometimes called cataplasm.

A simple and common poultice is made with bread and milk, to which a small portion of olive-oil should be added to keep it supple. For a valuable poultice. See ABSCESS; see also BARM, and MUSTARD. Linseed meal makes also a useful poultice.

POULTICES for HORSES, and other ANIMALS, are generally made with bran and linseed meal, thus: Pour boiling water on fine bran or pollard, so as to make a very thin mass; then stir in as much linseed meal or oatmeal as will bring it to a proper consistence: a little fresh hog's lard should also be added. This poultice may serve as a basis, to which other articles may be added according to circumstances. But a stimulating poultice is best made with the fæces of malt liquor instead of water.

POULTRY, domestic fowls. We have treated the various subjects of poultry under the heads of BANTAM-COCK, COCK, DUCK, EGGS, GOOSE, GUINEA HEN, HATCHING, HEN, INCUBATION, PEACOCK, PHEASANT, TURKEY, &c. &c. to which, therefore, we refer.

Pounce. See JUNIPER.

Pound. See AVOIRDUPOISE and TROY-WEIGHT.

POUND, in commerce, till lately an imaginary coin of the value of twenty shillings. Gold sovereigns of this value have lately been coined, but are in very limited circulation. See GOLD.

Powder. See GUNPOWDER.

POWDERS, in medicine, those substances which are given in a state of fine pulverization.

Powder of aloes with canella; Take of hepatic aloes, in powder, eight ounces; of canella bark, in powder, one ounce and a half: mix them.

This is the *Hiera Picra*, so well known to the public. Its dose as a purgative, is from ten grains to one scruple.

Compound powder of Asarabacca:

take of Asarabacca leaves three parts; the leaves of marjoram and lavender flowers, of each one part. Rub them together into a powder.

As a medicinal snuff, this has been found occasionally useful in tooth-ach and chronic opthalmia. See ASARABACCA.

For *compound powder of chalk.* See CHALK.

For *compound powder of Tragacanth.* See GUM.

For *Dover's powder.* See IPECACUANHA.

Power of Attorney. See LETTER OF ATTORNEY.

Pox, the Chicken. See CHICKEN POX.
Cow. See COW-POX.
Small. See SMALL-POX.
Swine. See CHICKEN-POX.

PRECORDIA, in anatomy, the fore-part of the region of the thorax, or chest.

PRAISE, has been defined renown or commendation; but it also implies, in morals, a state deserving commendation, and in this sense it is opposed to blame. See BLAME.

Praise or commendation, when justly bestowed and restrained within its proper limits, is meritorious; and more especially is it so, when it impels us to still further exertions in that career of moral justice which it is the duty of all to pursue. But that praise which inflates us with an undue sense of our own individual importance, and which induces us to believe that our good actions, are not *necessary duties*, but may be omitted or performed at our own will and pleasure, is vicious, and should never be bestowed. It is our duty to speak well of actions, the tendency of which is good, because such commendation is a motive to our further exertions; but, nevertheless, the best of all praise is the approbation of our own minds. See AMBITION, GLORY, HONOUR, and MERIT.

PRASE, in mineralogy, a peculiar species of quartz, consisting of this substance, intimately intermixed with actinolite; it is of a leek-green colour, of a glistening lustre.

PRATINCOLE, or *Glareola*, a genus of birds, comprehending three species, distinguished by a strong straight bill, hooked at the top; gape of the mouth large, as follow: the *austriaca*, or Austrian pratincole, above grey-brown; collar black; chin and throat white; breast and belly reddish grey. Five varieties: three inhabiting the heaths of Europe, near the banks of rivers; two found on the Coromandel coast; nine inches long; restless, clamorous. The *senegalensis*, or Senegal pratincole, is brown, belly reddish-white, with black spots; inhabits Senegal and Siberia; rather larger than the last. The *navia*, or Spotted pratincole, is brown, spotted with white, belly like the last; inhabits Germany; size of the first.

Precedent. See LAW.

PRECIPITATE, in chemistry, and medicine, a powder obtained by the process of precipitation from some liquid. For *red* and *white precipitate*, see QUICKSILVER.

PREDISPOSITION, in medicine, that constitution, or state of the body, which disposes it to some disease.

Among a number of individuals, equally exposed to any cause of disease, we constantly find some affected, and others escaping. The circumstances on which exemption and aptitude depend, have been anxiously investigated; but, although facts have been noted, the principal lies involved in total obscurity. It appears, however, that between those actions of our different organs and of the same organ which frequently occur together, or in succession, a bond of union is formed by habit, as in the case of our ideas. Of any two movements, therefore, if the former tend to introduce the succeeding, the second must take place, unless it be prevented by some interposing force. Hence it is manifest that robustness of constitution, principally consists in the strength of connection between the several members of the series, and proneness to disease in the facility with which the series may be broken. On this principle, we may understand why brutes are more robust than the human species. Their actions of body and mind are less diversified than ours, and being, in consequence, more frequently repeated in the same order, they acquire greater force and union; or as it has been termed *strength of catenation*. Perhaps the remarkable exemption of negroes from the contagious fevers which affect so fatally white persons in the West Indies and America, may be attributed to a similar cause—the uniformity of their lives.

Persons who have enjoyed uniformly good health are said to be, and we believe in general are, in greater danger when they become ill: the disturbance of their functions betrays the intervention of a powerful cause.

The depressing passions, fear, grief, and anxiety, most powerfully contribute to the introduction of some diseases, particularly those of the contagious and debilitating kind; and, therefore, the inculcation of courage and hope, cannot by persons attendant on the sick, as well for their own sakes, as for that of their patients, be too strongly enforced.

Pregnant and puerperal women are among the persons most liable to be affected by the slighter causes of disease.

In transition from climate to climate, it is obvious, that our habitual movements are thrown into great confusion. In this state of disordered action, there is often no power to protect the system. It has been also very generally observed, that contagious fevers are liable to make their attacks after intoxication, when the whole internal man is tumult.

Much has been said of *hereditary diseases*, or *hereditary predisposition* to *disease*. The existence of such diseases and predispositions have been by many considered very questionable. It is true, that it very frequently happens, the son has the gout, like the father; but this may, with greater probability, be traced to *similar modes of living*, than to hereditary disposition: for in numerous instances, where the *modes of living* are different, the son has not the diseases with which the father was afflicted. But, in other cases, facts are so strong as to induce us to believe that some diseases are hereditary. Of these, scrofula and insanity furnish instances.

PREGNANCY, a state of the female of the human subject, too well known to need description.

Although this state is natural to all women, it is in general, in consequence no doubt chiefly of an erroneous method of education, the source of many disagreeable sensations; and, sometimes, the cause of diseases which are, however, rather troublesome than severe. It is now universally admitted, that those females who bear children enjoy, most commonly, more certain health, and are much less liable to dangerous diseases than those who are unmarried, or who are sterile.

The chief symptoms which indicate the commencement of this state are a disposition to hysteric fits; and, especially in delicate habits, a continual tendency to fever; the palms of the hands are flushed, and there is sometimes a small degree of emaciation; the face grows thinner, and there is an unusual irritability of temper; there is also pain and tumefaction of the breasts; the areola around the nipples becomes larger than usual; nausea and sickness in the morning; and a suppression of the menstrual evacuations. As the gestation proceeds, the female has frequently antipathies and longings relative to food, sometimes of the most extraordinary and strangest kind. No female, however, can be in this state while she regularly menstruates.

The diseases to which pregnant females are chiefly liable, are sickness, vomiting, heartburn, costiveness, diarrhœa, suppression of urine, and its consequences, and especially retroverted uterus, and abortion.

The most common attendants on this state, such as sickness, heartburn, costiveness, and diarrhœa, may be obviated or alleviated by prudent attention to diet and regimen; in heartburn, magnesia is one of the best remedies; and costiveness may be occasionally removed by castor-oil; for diarrhœa, perhaps, nothing is superior to beef-tea. But moderate exercise in the open air is more likely to abate any of these unpleasant symptoms, than any medicine whatever.

The retroversion, or bearing down of the uterus, is one of the most troublesome complaints to which a pregnant woman is liable. The only period, however, in which it can happen, lasts but four weeks, and that is between the end of the third month, and the end of the fourth month. The suppression of urine is the principal thing to be attended to in this complaint, and that must be drawn off by the catheter. In such case, a medical attendant should be consulted; but as it will be necessary to pass the catheter afterwards twice a day till the uterus rights itself, it is sometimes advisable to attempt the reducing of it; which is done by the patient placing herself on her hands and knees, and the two fingers of one hand should be passed into the vagina, and a finger of the other into the rectum, by which means it is sometimes possible to succeed. When it is left to time, the uterus is sure to recover its proper situation; for which reason it is preferable to leave it. In any reduction of this kind the bladder should always be previously emptied, and no force must be used.

For the mode of treating abortion, see ABORTION.

The state of the pregnant female has in all ages, and in most countries, been considered as one demanding attention and respect. It is one, also, in which a variety of little attentions and kindnesses from the husband is peculiarly necessary, and which cannot fail to sooth the anxiety inseparable from such a state. But the female herself should never forget, that it is a state arising from perfectly natural causes, and that, with only common care, she has no reason whatever for alarm or uneasiness. See PARTURITION.

PREHENSILE, or PRENSILE, in zoology, a term applied to the tails of animals when they have the power of coiling them round other substances, and suspending their bodies by them.

PREJUDICE, a judgment formed before hand without examination. It is a weakness or imperfection from which no human mind can be wholly free. Some are indeed much more so than others; but there is no one who does not occasionally act upon principles, the propriety of which he never investigated; or few who do not hold some speculative opinions, into the truth of which they never seriously inquired. Our parents, our nurses, our instructors, determine a multitude of our sentiments; our friends, our neighbours, the customs of the country where we dwell, the established opinions of mankind, form our belief; the great, the pious, the learned, and the ancient; the king, the priest, and the philosopher, are characters of mighty efficacy to persuade us to regulate our conduct by their practice, and to receive as truth, whatever they may dictate. In a word, we are emphatically, and always the CHILDREN OF THE CIRCUMSTANCES by which we are surrounded, and more especially by those with which we are surrounded in our earlier years. This being the fact as to the method by which our prejudices and our opinions are obtained, how cautious, forbearing, and charitable ought we not to be when judging of the opinions, motives, and conduct of others; and how careful ought we to be perpetually to suspect our own. The multudinous opinions and discordances in the world emphatically impress upon us the necessity of such caution. This caution, we are, however, sorry to observe, is too frequently neglected, and hence arise a variety of animosities amongst mankind, which the exercise of a little philosophical candour would most effectually remove. See CIRCUMSTANCES, DIFFERENCE OF OPINION, DOUBT, ERROR, EVIDENCE, &c.

Presbyopia. See SIGHT.

Prescription. See MATERIA MEDICA, and PHYSICIAN.

Presence of Mind. See ACCIDENTS.

PRESENTMENT, in law, is an instrument presented to the court by a grand jury, stating certain matters or things from their own knowledge or observation, without any bill of indictment being laid before them, at the suit of the king; as the presentment of a nuisance, a libel, and the like; upon which the officer of the court must afterwards frame an indictment, before the party presented can be put to answer it.

PRESS, in the mechanic arts, a mamachine made of iron or wood, serving to squeeze or compress any body very close. Presses are of various kinds, dimensions, and uses. It seems, however, pretty generally agreed, that presses with *iron* screws are, upon the whole, preferable to wooden ones.

THE PRESS, implies, in a figurative sense, that engine which has wrought, and is working such a revolution in the mind, manners, morals, and knowledge of mankind; or, in other words, books, newspapers, and other printed vehicles of information. See PRINTING.

PRICE, an equivalent paid for any thing. The increase in the prices of the necessaries of life has been long a subject of complaint, and is, we fear, likely to continue to be so; yet the great inequality of the present prices, with those of former times, becomes very much diminished, if the relative proportion of the prices of labour, &c. be taken into the account. We cannot go much into detail, but it may be amusing to state the price of a bushel of wheat at different periods of our history. In the year 1050, a bushel of wheat sold for 2¼d.; in 1150, for 4½d.; 1250, for 1s. 7¼d.; in 1350, 1s. 10½d.; in 1450, 1s. 5d.; in 1550, 1s. 10½d.; in 1600, 4s. ½d.; in 1625, 4s. 11d.; in 1650, 5s. 6d.; in 1675, 4s. 6d.; in 1700, 4s. 9½d.; in 1720, 4s. 4½d.; in 1740, 3s. 8d.; in 1760, 3s. 9¾d.; in 1780, 4s. 5¾d.; in 1795, 7s. 10d. Since this period, the fluctuation in the price of wheat, as well as other commodities, has been exceedingly great. In 1800, wheat was as high as 18 or 20 shillings a bushel; in 1810, it was about 15s. and at the present time, 1820, it is about 10s. per bushel. But in some of the intermediate years between 1800 and the present period, it has been as low as 7 or 8 shillings per bushel.

PRICKING. In shoeing a horse, the nail is sometimes driven in a wrong direction, and the sensible parts are wounded; this is called *pricking*. Whenever a horse becomes lame without any apparent cause, soon after being shoed, we may suspect that he is pricked.

When a horse has been pricked, the shoe should be immediately taken off, the offensive matter, if any, let out, the wound be dressed with tincture of myrrh, or green basilicon, and the horse be suffered to stand in the stable without his shoe. This method, pursued for a few days, will usually effect a cure.

Prickly-pear. See CACTUS.

Prick-timber. See SPINDLE-TREE.

Prick-wood. See CORNEL.

PRIDE, inordinate and unreasonable self esteem. Pride is one of the most dangerous states of mind; it is exemplified in a thousand ways; and such is the predominance of self, too often pervades our thoughts and actions without our being aware even of its very existence. But whoever will candidly examine his own mind, and the imperfections which he finds inseparable from his nature, must confess, with a deep sense of humility, that pride is an intruder, and that our utmost efforts are required for the expulsion of such an improper inmate, and for the counteraction of that conduct which arises from the promptings of this busy personage.

Arrogance, vanity, and presumption, are children of the same family, and very injurious to the moral well-being of man. The best remedy for all these is a just sense and an active performance of our *duties*, in whatever class of society we may be placed.

Pride, the fish. See LAMPREY.

PRIMÆ VIÆ, in anatomy, the first passages: the stomach, and the intestines.

PRIMROSE, or *Primula*, a genus of plants comprehending nineteen species, natives of Europe; four of them of our own country. The following are the chief.

The *Vulgaris*, or Common primrose; the flower, when wild, of a pale brimstone hue; a variety purple. The varieties produced by cultivation are common yellow-flowered; white; paper-white; red; double-yellow; double-white; double-red; double-pink; double-crimson. Found wild in most parts of Europe.

The *Elatior*, Oxlip, or great cowslip, has the border of the corol flat, which distinguishes it from the cowslip. Many varieties: purple, red, golden, orange, with different shades of each.

The *Veris*, Common cowslip, or paigle, has the border of the corol concave. The varieties are, the Common single yellow cowslip; double yellow cowslip; scarlet cowslip; hose, and hose cowslip. The flowers have a moderately strong and pleasant smell, and a somewhat roughish bitter taste. Vinous liquors impregnated with their flowers, by maceration or fermentation, and strong infusions of them drunk as tea, are esteemed corroborant and anodyne. An infusion of three pounds of the fresh flowers in five pints of boiling water is made in the shops, with sugar, into a syrup of a fine yellow colour, and agreeably impregnated with the flavour of the cowslip.

Polyanthuses are all varieties of one or the other of the above-mentioned species. They have been so much improved during the last century, as almost to equal the auricula; in some parts of England they are so much esteemed, as to sell for a guinea a root. The several kinds may be propagated by sowing the seeds obtained from such as have upright large stems, producing many flowers upon a stalk, which are large, beautifully striped, and not pin-eyed. No common kinds of the species should be suffered to flower near them. The seeds should be sown in boxes filled with light earth, in December; care must be taken not to bury the seeds too deep. In May, the plants may be transplanted into a shady border. See also below.

The *Farinosa*, or Bird's-eye primrose, has the border of the corol flat; leaves mealy underneath; sometimes found a foot and a half in height.

The *Longifolia*, or Long-leaved bird's-eye primrose, has serrate glabrous leaves; umbel nodding; corol with a very long tube; a native of the Alps.

The *Cortusoides*, or Cortusa-leaved primrose, has wrinkled lobed leaves; the scape many flowered: a native of Siberia.

The *Marginata*, or Silver-edged primrose, has the leaves obovate, tooth-serrate, edged with white; a native of Switzerland.

The *Auricula*, Auricula, or bear's ear, has the leaves serrate, glabrous, obovate, succulent, with mealy edges; flowers varying in colour; most commonly yellow or red; sometimes purple and variegated; or with an eye powdered with meal; scape many-flowered, about as long as the leaves; a native of Switzerland and Austria; flowers in April and May.

All these species are so easily raised by parting the roots, that it is seldom worth while to raise them from seeds. The double kinds, however, can only be increased without failure, in this way. If we want original sorts, we must have recourse to sowing, which should be done in the spring, in boxes or large pots, filled with light rich mould. About the end of August, let the plants be transplanted in rows six inches asunder, in a border of light rich earth, exposed to the east. The roots should be constantly removed and parted every year, and the earth of the border changed.

PRIMROSE, the Tree, or *Œnothera*, a genus of plants comprehending fifteen species, almost all of them natives of North or South America. The following are chiefly cultivated: The *biennis*, or Broad-leaved-tree primrose, has ovate lanceolate leaves, and bright yellow flowers; opening usually between six and seven in the evening, hence this plant is sometimes called the night primrose. The uppermost flowers appear first in June, the stalk still advancing in height: there is a constant succession of flowers till late in the autumn. The *longiflora*, or Long-flowered-tree-primrose; the *mollissima*, or Soft-tree-primrose; the *fruticosa*, or Shrubby-tree-primrose; and the *pumila*, or Dwarf-tree-primrose. All these plants are hardy, and with a little care will thrive in any soil or situation in our own country.

Prince's feather. See LOVE-LIES-BLEEDING.

PRINCE'S METAL, a mixture of copper and zinc.

PRINCE'S WOOD, or SPANISH ELM, is the produce of the *Hamelia ventricosa*, a tree growing in the West Indies and South America. It is of a fine soft grain, and used by cabinet makers.

PRINTING, the art of making an impression upon one body, by pressing it upon another. This art in some way or another, has been known in all ages. It has been done upon wax, upon plaster, upon iron by the ancients; it has been done with wooden blocks upon cotton and silk by the Indians. It is now divided into four distinct branches. Common, or letter-press printing; rolling-press printing; calico printing; and stereotype printing—we can only notice here the first and last of these. Without entering into any minute particulars, it may be stated that LAURENCE COSTER, a German, invented the art of letter-press printing; but that FAUST, SCHOEFFER, and GOTTENBERG brought it to greater perfection, about the middle of the fifteenth century. The first book which was printed in England, is said to have been Rufinus on the Creed, printed at Oxford, in 1468. From its connexion with learning, and its influence on the human character, it is certainly the most important invention ever offered to the world.

The workmen employed in printing are *compositors*, who range and dispose the letters into words, lines, pages, &c. according to the copy delivered by the author; and the *pressmen*, who apply ink upon the same, and take off the impression.

The letters, usually called types, are made of a mixed metal; (see TYPE) and are disposed in cases with separate divisions, called boxes, for the different letters. There are two cases containing the types, called the upper and lower case: the upper contains the capitals, small capitals, accented letters, figures, and the marks of reference; the lower, the small letters, the double letters, the stops, and the spaces which go between the words, and fill up short lines. A pair of cases for Roman types, and another for Italic, are usually placed on each side the frame. All this apparatus stands sloping, so that every part is within the reach of the compositor.

The compositor, from the copy before him, collects the different letters, &c. and places them in a *composing stick*, which, when full, he empties into a frame of wood, called a *galley*, and thus proceeds till a complete page is formed, when he ties it up with a cord, or packthread, and setting it by, proceeds till the number of pages contained in a sheet is composed; he then carries them to the imposing-stone, there to be ranged in a frame called a chase; this is termed *imposing*.

To *dress the chase* is to range and fix the pages, leaving the proper margin between them. This being done, the work is called a *form*: two forms are required for a sheet, and the distances between the pages must be so accurate, that the impression on one page shall fall exactly on the back pages of the other, this is called *register*.

As mistakes will occur, a sheet called a proof, is printed off, and given to the corrector of the press, who examines it while a boy reads the copy to him. When the errors are corrected, another proof is taken, and sent to the author, who, if he wishes to see another proof after his corrections are made, writes upon it *revise*.

When all the corrections are made, the form is committed to the pressmen, whose business it is to work off the form thus prepared and corrected; for this purpose, paper, ink, balls, and a press are required. To prepare the paper for use, it is first wetted, by dipping several sheets together in water; these are afterwards laid in a heap, one on another: and to make them take the water equally well, they are all pressed down close with a weight at top. For the composition of the ink see **Ink.** The balls are a kind of wooden funnels, with handles, the cavities of which are filled with wool, and this is covered with undressed sheep skins, made extremely soft and pliable. The pressman takes one of these in each hand, and having applied one of them to the ink-block, works them together till the ink is equally distributed, and then he blackens the form, which is placed on the press, by beating the face of the letters with the balls. Lately, however, a great improvement upon this mode of blacking the letters has been made by using cylinders instead of balls, which black the whole form by being rolled simply over it once.

The form being laid on the stone and inked, the pressman takes a sheet of paper from the heap and spreads it straight on a frame called the *tympan*, which confines a fold of blanket or woollen cloth between two sheets of parchment; to the tympan is added a thin frame of iron called a *frisket*, which is covered with paper cut in the necessary places, that the sheet may receive the ink without injuring the margins. To regulate the margins, a sheet of paper is fastened on the tympan, and on each side is fixed an iron point, which makes holes in the sheet, and the points are placed in the same holes when the impression is to be made on the other side. The carriage containing the stone, form, paper, &c. is now, by turning a handle, rolled under a screw, which, with two pulls of the handle, makes the impression; it is then rolled out again and the paper taken off and laid on one side. The form is then again inked, and another sheet laid on as before; this is of course continued till as many sheets are printed as are wanted. After one side of all the sheets are printed, another containing the pages for the other side is laid upon the press stone and printed off in the same manner. When the printing is completed, the letters, &c. are distributed in their several cases.

This is the usual method in which printing has been executed for a long period, but, besides various improvements of a minor kind, and the performing of the operations of the printing press by the assistance of the steam-engine, *Stereotype* printing has, for standard works, during the last fifteen years, been a good deal used. We have not room to give a history of this curious process; but it appears that it was attempted in the middle of the last century, and met with so much opposition from the trade, that it was discountenanced.

The mode of stereotype printing is this: first to set up a page in the usual way, and when it is rendered perfectly correct, a cast of plaster of Paris, prepared from that which is found in Nottinghamshire, and said to be the best, is to be taken from it; in this cast the metal for the stereotype is to be poured. Each page is cast separate; and if made in the first instance correct, it cannot by any possibility, except wear or fracture, become incorrect; nor, of course, can any of the letters be displaced, as the whole page consists of one solid piece of metal.

Various improved printing presses have been invented, among which, what is called the *Stanhope* and *Ruthven's* press, may be mentioned. The last of the kind is by Mr. Daniel Treadwell, for which he has a patent, and in which there is great simplicity and originality. Its operations are conducted with more facility than any other which we have seen, and as the rolling of the table and the horizontal movement of the bar are dispensed with, the labour is considerably abridged. A particular account, with a drawing of this patent, will be found in the *London Journal of Arts and Sciences*, for September, 1820.

PRISM, a piece of glass, in form of a triangular prism, much used in experiments concerning the nature of light and colours. See Colour.

PRISON, a jail or place of confinement. Prisons are employed in this country for different purposes. Sometimes as places of safe custody for persons accused of some crime; sometimes as places of punishment; and sometimes as places of confinement for persons who cannot pay their creditors those debts to which they are entitled by the law. In all these cases, imprisonment is fraught with important consequences to society, and therefore should never be had recourse to, unless some imperious necessity requires it.

That the general mode of imprisonment adopted in this country is exceedingly injurious to the habits and morals of those who are usually the inmates of our prisons, admits of no question. Many patriotic and benevolent persons, amongst whom the celebrated JOHN HOWARD of the last age, and of the present, Messrs. NEALE, GURNEY, BENTHAM, BUXTON, and Mrs. FRY, may be mentioned, have been zealous in their endeavours to effect an alteration in these places of abode for the wretched, the ignorant, and the criminal; but although some alteration has been made, yet no efficient arrangements have been directed by authority, so as to prevent a return to a bad system.

Whatever may be said by those who are in the continual and immediate contemplation of crime and its frightful effects, it does not appear that *coercion* itself, much less the infliction of pain in the shape of punishment, unless it be accompanied with benevolent and moral superintendence, makes any permanently good impression upon the human character: some, and those a few, are occasionally deterred by the fear of imprisonment or other punishment; but we find by far the greater number are again and again subjected to such processes, not only without melioration, but, on the contrary, the more often they are imprisoned and punished, the more demoralized and base they become. Surely this fact teaches us an important lesson!

What then it will be said, are the villains of society to range at large, so as to make it unsafe for the unoffending part of the community to be abroad? We answer, certainly not. What we are desirous of enforcing is, another and a better system of moral discipline for our prisons, one that shall have in view the alteration of the habits and manners of the criminal rather than his *punishment;* whereas, according to our present system, punishment, or an infliction of mental and bodily pain, appears to be the chief object of our penal laws, and of the executors of those laws; but the infliction of pain, unless some good can be effected by it, is positive wrong, and originates from the basest of all principles, revenge.

The cure of moral, must be effected upon the same principles as bodily disease: our chief object is the removal of the disease, and in so doing, as little pain as possible should be given in both cases. In the cure of both, also, kindness, soothing, and benevolence, are great and powerful assistants. In moral disease, more especially, have these great, important, and beneficial effects. We allude in these observations to the imprisonment and punishment of those persons usually denominated criminals, but there is another class of persons, concerning whom we are desirous of saying a few words.

Imprisonment for debt has been so long practised in this country, that we have almost ceased to consider it in any other light than as a thing of course. In most other imprisonments, of the directly criminal kind at least, the person who is imprisoned is tried by a jury of indifferent persons, and, therefore, however he may be punished, his case has at least been inquired into, and proof adduced that he has offended against the law. But in the debtor's case, he is deprived of his liberty by the sole act of one individual creditor, without any other process than an affidavit that he owes to such creditor the sum of fifteen pounds. And, till lately, the debtor, without payment of the debt, was liable to imprisonment as long as his creditor chose, even for life.

The infliction of such punishment is not on the opinion of a disinterested judge, but is referred to the arbitrary discretion of a private, and sometimes, no doubt, irritated individual. He who formally is, and substantially ought to be, the judge, is in reality no more than ministerial, a mere executive instrument of a private man, who is at once judge and party. Every idea of judicial order is by such process subverted. If insolvency be no crime, why should it be punished with arbitrary imprisonment; and if it be a crime, why should it be delivered into private hands to pardon without discretion, or to punish without measure? We are aware that credit must be preserved; but equity must be preserved also; and it is impossible that any thing should be necessary to commerce which is inconsistent with justice.

The legislature has been for some time laudably engaged in effectuating some alteration in the laws relative to imprisonment for debt; but whilst benevolence and sound legislation on the one hand, would render such imprisonment shorter and more tolerable, there appears to be some contending interests, prompted, we fear, by vindictiveness, which may, but we hope will not, render the efforts of those better spirits ultimately abortive. See DEBT and PUNISHMENT. See also *Buxton on Prison discipline*, and *Gurney's notes on Prisons*.

PRIVET, or *Ligustrum*, a genus of shrubs, consisting of three species, natives of most parts of Europe and Japan. The *vulgare*, or Common privet, is a shrub, about six feet in height, branched, the bark of a greenish ash colour, irregularly sprinkled with numerous prominent points; branches opposite, young ones flexible and purplish, leaves opposite, smooth on both sides; flowers white, but soon changing to a reddish brown; seed a small black berry. It retains its leaves in part through mild winters. It is easily propagated by seeds, layers, or cuttings; it is esteemed ornamental for hedges, but is of no importance in cther respects, although the finer branches are occasionally used for fine baskets, and other wicker work, on account of their great flexibility.

Privet, the Mock. See PHILLYREA.

PROBANG, a long, flexible piece of whalebone, having sponge fixed to the end; it is used to force down into the stomach substances which happen to stick in the œsophagus. See BLOWN.

Probate. See EXECUTOR.

PROBE, in surgery, an instrument made of silver or other metal, of a long and slender form; it is used to examine the depth of wounds, &c.

PROLAPSUS, a falling down. See FALLING DOWN.

PRONUNCIATION, in grammar, the manner of articulating or sounding the words of a language. Every person ought to endeavour to acquire a proper pronunciation: it gives strength and effect to whatever we wish to convey to another by means of speech, and therefore is not to be neglected. The best book as a sort of standard for the pronunciation of our language, is the Dictionary of the late Mr. JOHN WALKER, which we advise the young in particular most sedulously to consult.

PROOF SPIRIT, in pharmacy and medicine, a mixture of alcohol, or spirit of wine and water, consisting of fifty-five parts of spirit, and forty-five parts of water. The specific gravity of proof spirit is 930, water being 1000. Proof spirit is used for a variety of tinctures. See GENTIAN, JALAP, PERUVIAN BARK, &c.

Property. See INDIVIDUAL PROPERTY.

PROPORTION, DEFINITE, in chemistry, a term applied to those proportions, or parts of bodies, which combine under certain circumstances in the same way and in the same quantities. Thus nitrate of potash, under all circumstances, and in all situations, consists of 54 parts of nitric acid, and 46 of potash, per cent. Common salt of 46 of muriatic acid, and 54 of soda; no matter whether the salt be taken from the sea, from a spring, or artificially made. Carbonate of lime is always found to consist of 43.2 of carbonic acid, and 56,8 of lime. Sulphate of barytes of 34,5 of sulphuric acid, and 65,5 of barytes, and so on in an infinity of other compounds. The more rigorously this law has been examined, the more conspicuous and decided have become the proofs of its reality. See Chemical Affinity.

Proposition. See Logic.

PROSPERITY, good fortune. A state of prosperity, or at least ease in worldly circumstances, is continually sought after by all mankind; but how few comparatively obtain the desired eminence; and, when obtained, how few of those who have obtained it, possess that, for which they have been so anxiously panting and toiling—happiness. This truth, for truth it is, ought to teach us the duty of moderation in all our expectations; that happiness consists not in repose but in activity; and that long-continued pleasures pall at length, and pass into the limits of pain. Prosperity is, therefore, frequently inimical, not only to our own happiness, but to the happiness of those around us; it induces indolence, and frequently begets disease; whereas adversity, or at least a moderate portion of it, stimulates us to action, gives us true views of human nature, and softens and humanizes the feelings. See Riches.

PROSTATE GLAND, in anatomy, a very large, heart-like, firm gland, situated between the neck of the urinary bladder, and the bulbous part of the urethra. It secretes the lacteal fluid, which is emitted into the urethra by ten or twelve ducts. This gland is liable to inflammation and its consequences.

Prune. See Plum.

Prunella, sal. See Nitrate of Potash.

PRUNING, in gardening, the operation of lopping, from wall and other fruit-trees, their superfluous branches, so that they may produce the greatest quantity of fruit, and at the same time be preserved in the most healthy state.

Of this operation it has been said that gentlemen prune too little, and gardeners too much; these extremes are therefore to be avoided.

Every one who has wall and other fruit-trees, cannot keep a professed gardener; nor is every one who calls himself so, qualified to prune. It is advisable, therefore, to learn the art: pruning is a pleasing occupation, and one which no gentleman should despise.

If a tree is young, and newly planted, the first thing is to head and keep it down, by cutting off, if it be a nectarine, peach, or apricot, all the shoots, and the stem itself, down to a few eyes, in order that the lower part of the wall may be furnished with new and strong wood. Make the cut sloping, and behind the tree, taking care, by placing the foot on the root, and the left hand on the stem, not to disturb the tree by the pull of the knife. Plaster the part with a bit of cow-dung, clay, or stiff earth.

If, towards the end of May, there should be wanting shoots, on either side of the tree, the shoot, or shoots which are there, should be cut or pinched down to two or three eyes, and before the summer is over more shoots will be put out. This work of shortening the young shoots, may be done any time before midsummer; and all ill-placed or superfluous shoots should be rubbed off as soon as they appear.

As the latent shoots grow, let them be timely nailed to the wall, close, straight, and equi-distant, but use no force. Lay in as many good moderate-sized shoots as may be, throughout the summer, for choice at winter pruning, yet do not crowd the tree; as the shoots proceed in length, continue to nail them to the wall, but avoid using too many shreds. Each side of the tree should be kept as equal as can be in wood, and the shoots should incline downwards, in order to fill the lower part of the wall, and to check the too free motion of the sap, to which all wall-trees, from the continual cutting, and warm situation, are liable. All the branches should have a horizontal tendency, although the upper cannot have it so much as the lower. As the upright branches in the middle are injurious to the horizontal ones, the pruner must be content to have some of the wall over the middle of a tree unoccupied; or at least should suffer none but weak, or very moderate shoots, to find a place there. Though crossing of branches is against rule, yet cases may happen where even this awkwardness may be permitted; the object is fruit, and to obtain this end, form must sometimes give way.

All fore-right and back shoots, and other useless wood, should be displaced in time. It is a very expeditious method to displace superfluous young shoots, by pushing or breaking them off; when they get woody, the knife must be used; but a young tree should be suffered to grow a little wild to exhaust the sap. In displacing buds, however, some fruit-spurs are sometimes lost, so that it is a rule with some pruners, to wait till spurs can be distinguished from shoots, and then to use the knife.

In regulating a tree at any time, begin at the bottom and middle, and work the way orderly upward and outward. Never shorten in summer, except a forward shoot, when wood may be wanting as above-mentioned; but when the tree is too thick, cut clean out what may be spared. None of the shoots produced after Midsummer should be nailed in, except when wood is wanting: they never bear fruit.

The health of fruit-trees is greatly promoted by observing the directions already given concerning their form; but care must be also taken that the shoots and branches are not injured by nailing, either by the hammer's bruising a shoot, by the nail itself, or by the tightness and number of the shreds. A slip of the knife may also wound and materially injure a tree: the point of it should be kept sharp, and the cut should be sloping behind the eye, neither so near as to injure it, nor so wide as to leave a stub. The bending of a branch much is a violence to be avoided; luxuriant wood must also be attended to and got rid of; but sometimes luxuriant shoots may be retained for the reasons mentioned above.

All diseased, injured, very weak, or worn out branches, as they occur, must be cut out; but if a tree is generally diseased, some caution must be used, not to cut out too much at once, if there be any hope of restoring it. A very old or a very young tree, which does not thrive, may, however, be cut a great deal.

Young trees are very apt to decline and sometimes die, if suffered to overbear themselves the first year or two of fruiting. The remedy is obvious, and should be resolutely applied.

A weak tree is helped much by training it more erect than usual; such a tree should be kept thin of branches, and always pruned early in autumn.

Old decaying trees should be lessened a little every year, and constantly watched, to observe where young and strong shoots are putting out below, in order to cut down to them; and though the time for doing this is usually autumn or winter, yet it may be best done in summer, observing to put some grafting clay or cow-dung to the part to prevent gumming, which summer pruning is apt to occasion.

All wall-trees should be kept clean from moss, cobwebs, and other filth; attend to insects, snails, caterpillars, and flies. The best remedy for all insects, flies, &c. is powdered quick lime thrown over the leaves; the great objection to it is its unsightliness. Any bark that is decayed by cracks, &c. must be cleared out to the quick, either by rubbing or the knife; afterwards wipe the part clean with sponge and soap.

When you have an unthrifty tree, attention to the soil may improve it. The roots may be laid carefully quite bare, and examined in order to cut off decayed or cankered parts, and to apply immediately to them some fine and good fresh earth, with a little thoroughly rotten dung in it, and a sprinkling of soot or wood-ashes. Hogs' dung applied fresh, is said to have a peculiar efficacy in recovering weak trees, and fresh cow-dung or horse-dung may be presumed also equally efficacious, if the doctrine of Sir HUMPHRY DAVY, relative to manure, be correct. If the soil is a strong one, a compost of fowls or sheep's dung, lime, with any fresh light earth, (one part of each of the former and three of the latter, mixed with the soil that is taken off,) will be a proper manure, to which a little sharp sand may be added. All these applications should be made late in autumn, or early in the spring.

The constitution of a tree is sometimes naturally barren: in such case it should be taken up; but sometimes a tree of this kind, when removed to another soil, and pruned greatly down, does well. A soil too rich in dung, sometimes occasions trees to be blighted: the remedy is sharp sand.

In order to health and strength, a tree must not be kept too full during the summer; a crowded tree cannot be healthy; the blossom buds of a tree being always formed the year before, they will be few and weak in a thicket of leaves, but, in order to avoid an over fulness, great amputations in the summer should not be made.

In clearing a tree of wood, care should be taken not to cut off the leading shoot of a branch. All shoots after midsummer should be displaced as they arise, except when wanted to fill up a vacancy.

Watering wall-trees with an engine smartly on a summer's evening is conducive to their health, and frees them from insects.

The *fruitfulness* of wall-trees is, of course, the chief consideration; besides what has been said above, the principal step to this end is the *shortening* of the shoots, which occasions them to throw out below the cut for future use; and it also prevents the extension of a tree, which, without shortening, it would be great to very little purpose, and bearing only at the extremities.

Peaches, nectarines, and apricots, bear their fruit on the last year's wood; it is, therefore, necessary to shorten them, in order to obtain a supply of shoots for bearing the next year. The rule for shortening is this: consider the strength of the tree, the more vigorous the shoots are, the less is required to be cut off; a weak tree must be pretty much cut, or it will not bear: from vigorous shoots one-fourth may be cut off; from middling ones, one-third; and from weak ones one half.

In shortening, the cut should be made at a leading shoot-bud, which is known by having a blossom-bud on one or on both sides of it. Blossom-buds are rounder and fuller than leaf-buds, are even discernible at the fall of the leaf, and plainly seen in the spring. It often happens that the blossom-buds are chiefly, and sometimes all, at the end of the shoot, but still it should be shortened if it be at all long. Never cut when there is only a blossom-bud; and prefer those shoots which are shortest jointed, and have the blossoms most in the middle. The shoots which lie well, and are fruitful or healthy, and but a few inches long, may be left whole. Always contrive to have a good leader at the end of every principal branch.

Apricots should not be so much shortened as peaches, nor do they so well endure the knife; shoots of the apricot, if under a foot, may be left uncut if there be room. The spurs of apricots should be spared, if not too long or numerous, for they bear well and continue for years. Some kinds of peaches are also apt to put out fruit-spurs; these must be managed accordingly.

The time for the principal, or winter pruning, is by some gardeners held indifferent if the weather be mild; but a moderate winter's day is often followed by a severe frost. The best time, therefore, is February, if it be mild, or as soon after as possible: for when the blossom buds become swelled, they are apt to be knocked off by a little touch or jar of the hammer.

For the method of pruning the vine, see VINE.

Various other observations relative to pruning fruit-trees, will be found in different parts of our work. See APPLE-TREE, PLUM, &c.

PRURIGO, a genus of diseases of the skin and external parts of the body, attended with itching and uneasiness.

The *prurigo mitis* arises generally in the spring, or beginning of summer, without any previous indisposition; it appears in soft and smooth elevations of the cuticle, seldom red or much inflamed, except from violent friction. It is most troublesome in bed; when the tops of the papulæ are removed by rubbing or scratching, a clear fluid oozes out, and gradually concretes into thin black scabs. It mostly affects young persons, and is commonly caused by want of cleanliness. When persons who are affected with it, neglect washing the skin, it often terminates in the itch.

The *Prurigo formicans*, so named from the sensations produced from it, resembling the stinging of ants, is a much more obstinate and troublesome disease than the preceding. It affects adults at all seasons of the year; the papulæ are sometimes larger than those of the last species, and are attended with almost intolerable itching. It has been generally supposed contagious, but Dr. Willan thinks not. It never terminates in the itch: it occasionally, however, terminates in a pustular disease.

The *Prurigo senilis* differs little from the last, but is aggravated, or becomes more permanent in old age. The state of the skin in this disease is extremely favourable to the production of an insect, the pediculus humanus, more especially to the variety termed body-lice. In this disease they arise, notwithstanding every attention to cleanliness or regimen, and multiply so rapidly, that the patient endures extreme distress. The nits, or eggs, are deposited on the small hairs of the skin, and the animals themselves are only found on the skin or the linen, not under the cuticle as some authors have represented.

In all the preceding complaints, it is obvious that the most rigid cleanliness is absolutely necessary. Medical applications to the skin itself, we are unwilling to recommend, because those which may occasionally produce relief: viz. mercurials, are always attended with danger. The prurigo similar to the itch, will, most probably, give way to an application of sulphur, or a weak solution of sulphuric acid; but too great care and circumspection cannot be used in these applications; and if they are used, the bowels should, during their use, be kept relaxed.

Several other local species of this disease have been described, such as the *prurigo podicis*, or itching about the anus, the præputium, the urethra, the pubis, the scrotum, and the pudendum muliebre. Cleanliness in most of these, is chiefly necessary for their removal; others are symptomatic, and must be removed by attention to the primary disorder. For the mode of treating the last, see GONORRHŒA.

PRUSSIAN BLUE, HYDOCYANATE OF IRON, or *Prussiate of Iron*, a well-known blue colour used in painting. There are several methods of making this colouring matter. See COLOUR-MAKING. The following comes also well recommended: take equal parts of sub-carbonate of potash, and some animal substance, such as dried blood, or horn shavings; heat them red hot in a crucible; when cold, pour six or eight parts of water upon the mixture. Filter the solution, and mix it with a solution containing two parts of alum, and one of sulphate of iron; a precipitate falls, at first a dingy green hue, which by copious washing with very dilute muriatic acid, acquires a fine blue tint. This pigment was discovered in 1710, by Diesbach, a colour maker of Berlin, whence its name.

PRUSSIATE, a combination of the prussic acid with different bases.

PRUSSIC, or HYDROCYANIC ACID, one of the most powerful and poisonous substances ever discovered. Cyanogen combines with hydrogen, and forms a triple compound: this compound is the hydrocyanic, or Prussic acid. It may be obtained by moistening prussiate of mercury with muriatic acid, and distilling at a low temperature, having surrounded the receiver with ice. A liquid is thus obtained, which has a strong, pungent odour, very like that of bitter almonds; its taste is acrid; it volatilizes so rapidly as to freeze itself; it reddens litmus; the specific gravity of its vapour, compared with hydrogen, is 12,7. Detonated with oxygen it gives as results, one volume of carbonic acid gas, half a volume of hydrogen, and half a volume of nitrogen, so that it consists of equal volumes of cyanogen and hydrogen.

Notwithstanding the highly poisonous nature of Prussic acid, attempts have been made by medical men to make it subservient to the art of healing. It has lately been given in consumptive cases, both in America and Italy, with some benefit. In the former country, three drops of the acid have been given diluted with three ounces of water, and taken in the course of twenty-four hours; a gradual increase has been made to even ten drops. In Italy, a distilled water from the cherry-laurel has been given, which contains, as is well known, the prussic acid. And in Germany, the vapour of laurel-water has been tried with good effect in some spasmodic affections of the lungs. Further experiments are, however, wanting to warrant the administration of such remedies: the domestic prescriber should not meddle with them. See Laurel-Water.

Of all the known poisons, this, without contradiction, is the most energetic and sudden. It is sufficient to apply one or two drops upon the eye, tongue, &c. of the strongest dog, to cause its death in the space of two minutes.

Happily, the difficulty of obtaining and preserving this poison, renders it excessively rare, and consequently but little calculated to become the instrument of crime. Cherry-laurel, its oil, extract, and water, when several times distilled, are poisonous, from containing this acid; bitter almonds, and indeed most of the bitter kernels of fruit contain this acid, and are poisonous for this reason.

If the symptoms have been occasioned by a dose of *weak* acid, (when the concentrated acid has been taken, death takes place before any succour whatever can be given,) a vomiting is to be excited, as directed under *opium*, &c. in our article Poison, and then the infusion of coffee, as mentioned under the same head, must be administered. Afterwards, at the intervals of half an hour, three or four table-spoonfuls of oil of turpentine, mixed with coffee, must be taken. Lastly, brandy and other stimulants, capable of rousing the system, should be perseveringly employed with warmth, friction, and blisters.

Psora. See Itch.

PSORALEA, a genus, comprehending twenty-nine species, mostly Cape plants. The following are cultivated: the *primata,* or Wing-leaved psoralea; flowers blue with white heels;—the *aculeata,* or Prickly psoralea, flowers blue;—the *bituminosa,* or bituminous psoralea, has also the flowers blue;—the *bracteata,* the *hirta,* the *Americana,* the *corilifera,* and *dalea.*

These are all increased by sowing their seeds in the early spring months, on a moderate hot-bed, or in pots plunged into it. They may also be increased by planting cuttings of the young shoots in summer, in pots filled with light earth, plunged into a hot-bed, and covered with glasses.

PSORIASIS, a disease of the skin, characterized by a rough scaly state of the cuticle, sometimes continuous, sometimes in separate patches, of various sizes, but of an irregular figure; and for the most part accompanied with cracks or fissures of the skin. There are several kinds of this disease. It is sometimes symptomatic of syphilis; and sometimes a sequel of the disease called lichen. See Lichen. It is distinguished from leprosy in the patches having neither an elevated border, nor the oval or circular form, by which all the varieties of leprosy are distinguished; they appear also upon the face, which rarely happens in leprosy. A species of this complaint is denominated the *baker's itch*; it affects the back of the hands; the chaps or fissures of the skin are often highly inflamed and painful, but have no discharge of a fluid from them: *Grocers* and *washerwomen* are liable to a similar complaint; but it does not appear that, while the causes which produce the disease continue, medicine can be of any use. See Tetter.

Ptarmigan. See Partridge.

PTELEA, a genus of plants, consisting of one species only, the *trifolia*, three-leaved ptelia, or shrubby trefoil, stem upright, woody, ten or twelve feet high, flowers whitish. It is cultivated by seeds, cuttings, and layers, and has a good effect in shrubberies, or other groups in pleasure grounds.

Pterocarpus. See SANDERS, the RED.

PTISAN, a cooling potion, obtained by boiling decorticated barley in water, and afterwards sweetening the liquor with liquorice-root; to render it laxative, senna is occasionally added to it.

PTYALISM, a salivation, or increased secretion of saliva from the mouth.

Publications, periodical. See NEWSPAPER, and PERIODICAL PUBLICATIONS.

PUDDING, a kind of pastry, composed of very different ingredients, according to the fancy or taste of the cook.

Those puddings which consist of a variety of substances, are in general not wholesome, and should not be eaten by dyspeptic patients. The best puddings are those which are made of wheat flour well boiled, with a portion, not large, of animal fat, and currants or raisins: or of rice, which is, for the dyspeptic, greatly to be preferred to flour. All baked puddings, for reasons so often stated in our work, should, by the dyspeptic and valetudinarian, be avoided.

PUDDING FISH, or *Sparus radiatus*, a species of the genus *Sparus*, or GILT HEAD, of which there are forty scattered through the seas of the globe. The following are the chief: the *auratus*, or lunulated gilt-head, inhabits the British coasts, and grows frequently to the weight of ten pounds; it resembles a bream in the shape of its body; the back is sharp, and of a dusky green; sides golden, tinged with brown. It is a coarse fish, and in no great esteem; it is caught abundantly in the winter in the Mediterranean. [illegible] *insidiator*, has a red body, yellowish at the sides; it inhabits the Indian seas; ten inches long; when dead becomes brown; flesh eatable. The *berda*, is whitish ash; inhabits the Red sea. The *niger*, has the back black, belly silvery; found in Yorkshire. The *radiatus*, the first-named species, inhabits Carolina; it is above green, purple at the sides; beneath rufous; head varied with blue, yellow, and green streaks.

PUDDLING, a peculiar process used in the conversion of cast into wrought iron. See IRON.

Puddling is also a term applied to a method of making dams, for the retention of water in ponds, &c., by ramming and otherwise securing the earth or clay, so as firmly to resist the water.

PUERPERAL FEVER, or CHILD-BED FEVER, a serious disease which sometimes attacks lying-in females.

This fever is usually the most fatal of all the disorders to which the sex is liable. But notwithstanding its prevalence in all ages, its real nature is still a subject of much uncertainty. It commonly attacks the patient within forty-eight hours after delivery, but sometimes on the fourth or fifth day, and occasionally considerably later. It is preceded, like other fevers, by rigor, which is commonly violent; and when happening during the time of parturition, may be confounded with parturient pains. In its earlier stage, it is attended with the signs of inflammation; pain in the back, hips, and region of the uterus; which in the part last mentioned, is also accompanied with a sense of heat and throbbing.

A sudden change in the quality or quantity of the lochia, also takes place; there is often a troublesome tenesmus, and the urine is high coloured, discharged in small quantity, and with pain. On the first attack, the patient is also generally seized with a vomiting of greenish matter, as in the cholera morbus; but sometimes there is only nausea, with a loathing at the stomach, and a disagreeable taste in the mouth. The belly swells to a considerable bulk, and is very painful to the touch. The tongue generally dry, though sometimes moist and covered with a brownish fur. When the fever has continued a few days, assumes a more putrid form; a diarrhœa of a dangerous nature comes on, and accompanies the future progress of the disease. The patient usually nauseates all kind of food and drink, except what is cold and acidulated. A troublesome hiccough is at length produced; petechiæ also appear sometimes with a miliary eruption; and in many cases, without prompt assistance, death closes the scene. When the patient is naturally weak, and the disease violent, sometimes death has taken place within twenty-four hours from the first attack; but the catastrophe is more generally suspended for some days: the eleventh from the commencement of the fever, is the most decisive. The most unfavourable prognostic arises from such a weakness of the patient as renders her unable to support so tedious an evacuation as that by which the fever is overcome; but when the lochia return to their natural state, and the swelling and tenderness of the abdomen abate, and there is moisture on the skin, there is reason to hope for a happy termination of the disease.

It may be necessary to mention here, that the pains in the abdomen which attend this fever, may be distinguished from those called *after-pains*, by their uninterrupted continuance, though they sometimes are occasionally increased; whereas in the latter, they often totally intermit. The presence of fever, and the remarkable tenderness of the abdomen, are also distinguishing characteristics of this complaint.

From the alarming nature of this disease, the domestic prescriber should not trust to his own judgment, but obtain, at once, the best medical advice.

It may, however, be useful to know that warm diluting drinks may be plentifully given at the commencement; and that the discharge of morbid matter may be promoted by a powder composed of two grains of emetic tartar, and one scruple of prepared chalk, well mixed together; of which from two to six grains may be given for a dose, and repeated as circumstances require. If the first dose procure no sensible operation, it may be repeated in an increased quantity, at the end of two hours. Should the disease be abated, yet not removed, which sometimes happens, by the effect of the first dose, the same medicine must be repeated till all the danger is over.

A saline draught ought also frequently to be given; it may be made thus: take of subcarbonate of potash, one scruple; of lemon juice half an ounce; of cinnamon water one ounce; of lump sugar half a drachm; mix them.

Clysters of chicken broth will also be found useful, and fomentations composed of a decoction of chamomile flowers, poppy heads, and marsh mallow roots may be applied with advantage to the tumefied abdomen.

PUFF BALL, or ***Lycoperdon***, a genus of fungi, which are powdery and fibrous within; seed, attached to the fibres; twenty-nine species, mostly natives of our own country. The ***Proteus***, or puckfish, is roundish, white or greyish, opening with a rent, common on our heaths. The ***bovista***, or Common puff-ball, is snowy; by age it dries internally into a very fine, light, brownish dust, used by the common people to stop bleeding. See AGARIC.

Puffin. See PENGUIN.

PULLEY, in mechanics, one of the mechanical powers, consisting of a little wheel or rundle, having a channel around it, and turning on an axis, and serving, by means of a rope, which slides in its channel, for the raising of weights.

PULMONARY CONSUMPTION, or PHTHISIS, a wasting of the lungs, attended with fever, cough, and expectoration of matter. It is one of the most fatal disorders to which mankind is subject, and, therefore, requires the most serious attention, as it very often originates from causes which are by no means thought, by the generality of persons, adequate to the production of the disease.

The causes of this disease are spitting of blood, [illegible]ppuration of the lungs in consequence of previous inflammation, catarrh, an asthma, or rather complaints which put on the appearance o asthma, and tubercles. Although a spitting of blood does often degenerate into, or precedes consumption, it is also sometimes the consequence of this dangerous disorder.

Persons most liable to this disease, are those of a fair complexion, fine, and soft skin, florid cheeks, and a slender make; with high cheek bones, hollow temples, long neck, shoulders standing out like wings, narrow or flat chest, and a remarkable prominence of the os sacrum; to these may be added sound teeth: there are, however, exceptions to most of these indications. It is said also, that males are more liable to the disease than females, but our own observations indicate directly the reverse. We believe that both males and females, having a scrofulous taint in the constitution, are often afflicted with it; and we have observed that those affected, without any exciting cause, with the disease called *ganglions*, are peculiarly liable to it. Persons, however, of all ages and sexes are liable to it; but it most commonly attacks young subjects, between the ages of fourteen and twenty-five.

Persons possessing a predisposition for this disease, often remain for a long time without feeling any other inconvenience than some oppression at the breast in moist weather, or in hot apartments. Their breathing is easily hurried, sometimes by the slightest motion; they become languid, paler and thinner. As the disease increases, a slight, frequent, and dry cough is observed, which is most troublesome in the night. This by proper care is often relieved, and the patient remains in this state for a long time, even for years, if he take proper care of himself.

More commonly, however, we find the cough increasing, and frequently accompanied with more or less catarrh; this is usually ascribed to cold; and is too often neglected till the disease becomes both obstinate and alarming. This may be considered as the beginning of the disease; at which period the cough is sometimes dry, and at other times attended with more or less expectoration.

When the cough begins with catarrh, it is very generally agreed that a free use of diluting liquors, bland emulsions, small doses of nitre, taking away a few ounces of blood, if there be much inflammation, inhaling the steam of warm water, and an occasional dose of paregoric elixir, will be the best practice. And these methods will generally succeed, especially if the patient's chamber be of a moderate temperature, and he carefully avoids exposure to a cold, damp, or raw air, till the complaint be removed. When the cough has been obstinate, and the inflammatory symptoms considerable, a warm bath, not exceeding 92°, has proved greatly advantageous. When this is had recourse to, the patient should remain in it only a very few minutes, and go soon afterwards to bed, but not with a view to force a sweat by the increased weight of bed clothes.

Patients of a consumptive habit, who have had an attack of this kind at the beginning of winter, are particularly liable to a return of the complaint during the continuance of the cold season; a relapse is to be guarded against; and by nothing more effectually than the use of socks and a flannel under waistcoat.

When the cough is occasioned by an immediate inflammation of some part of the lungs, from some of the usual causes of inflammation, bleeding, perhaps more than once, will be necessary; together with a strict attention to a spare and cooling diet, diluting drinks, the inhalation of warm steams, and the warm bath; but above all, the speedy application of a large blister, as near as may be to the supposed seat of the inflammation. As a cough will often remain after the original complaint is abated, a prudent use of opiates at bed time will be found of service.

In this, as well as in the catarrhal cough above mentioned, Peruvian bark is sometimes given, but it never fails to increase the complaint, and should therefore not be resorted to.

When the disease has been neglected, or the means to remove it have been unsuccessful, a soreness and slight lancinating pains are felt in the breast; the soreness is pretty constant, and increased by the cough; and the pain in the side often prevents the patient from lying on the side affected. Flushing heats are felt in the palms of the hands and the soles of the feet; and the breathing is short and laborious; the expectoration is thin, frothy, sometimes streaked with blood, and coughed up with difficulty. To this succeeds an expectoration more copious and purulent; the breath is proportionally offensive, and the hectic fever more considerable; the pulse is increased in quickness about noon; but the most considerable paroxysm of the fever is at night, which continues till towards the morning, when it terminates in a sweat. As the disease advances, these sweats become more profuse, but produce no relief to the patient; during the exacerbations, a circumscribed redness of the cheeks appears, while the rest of the face is pale. The costiveness which commonly accompanies the commencement of the disease, is usually succeeded by diarrhœa, the spitting lessens, and all the purulent matter seems to be carried downwards. The general wasting of the body occasions the nails to curve inwards, the hairs to fall off, and the eyes to sink in their sockets; the legs commonly swell, and, at length, death closes the scene. In general the patient himself is totally unconscious of his melancholy situation; hope never, or but rarely, deserting him to the last.

We know of no medicines which can exert their specific effects upon the lungs, by dissolving tuberculous concretions; nor is it probable that any such will ever be discovered, although the efforts of the intelligent physician should be still directed to such an end. Yet medicines which operate in a general manner upon the system, may tend to disperse tubercles, or to prevent their formation. There are not wanting instances of wonderful recovery, in cases where the evil was supposed beyond the power of physic; and in some, where nature has been left to herself; so that even in this often fatal disease, it is impossible to say how long it may continue, or to pronounce, on any one case, that it is absolutely incurable.

Various have been the projects and expedients adopted for the alleviation and cure of this formidable malady. The Peruvian bark has been sometimes of advantage, but at others exceedingly injurious. Vomiting, bleeding, issues, setons, blisters, change of air, a sea voyage, a voyage to Lisbon, exercise on horseback, or in a coach, swinging, the Bristol Hotwell water, and the inhalation of various gases, so much at one time recommended by the late Dr. BEDDOES, have had many advocates, and in some cases have been successful; but where one remedy fails, it is natural that a trial of others should be made. At the present time the attention of the public has been excited by Dr. CRICHTON, to an inhalation of the vapours of tar, as a remedy for this complaint. The tar is put in an earthen vessel, over a lamp or heated iron, to cause a slow volatilization, until the air of a room is sufficiently impregnated with it. The prussic acid has also been lately recommended in this complaint. See **PRUSSIC ACID**.

The best *diet* in some consumptive cases is milk, and of this asses' milk is said to be the best. But the patient's feelings and inclinations should be attended to; stimulating animal food, and the use of stimulants generally, whether food or medicine, must be avoided: whatever increases the motion of the pulse, or the heat of the body, is commonly mischievous.

In this complaint, although much may be done for the ease and comfort of the patient by the domestic prescriber, yet the best medical advice should by all means be obtained. See **CATARRH**, **COUGH**, and **LUNGS**.

PULSE, that stroke, or motion of the blood, which is felt on applying the finger to an artery in a living animal. In man, the pulse may be felt in various parts of the body, but the most usual place of feeling it is at the wrist.

Notwithstanding all that has been said and written about the pulse, no rules have been laid down, which can upon every occasion, and with all individuals, be relied upon, or which enable us to judge accurately of the state of health and disease by the motion of the blood. From seventy to eighty pulsations in a minute have been commonly considered the number which constitutes health, but there are so many deviations from this, that we scarcely know where to fix a limit; in children they are often considerably more in number than eighty; and in the middle-aged and old, they are often considerably less when no disease whatever is present. In attempting to decide on the state of the pulse in disease, it is of importance to know the usual pulsations of the patient when in health, as they differ materially in different subjects. There are, it is said, adults in health, whose pulse do not exceed forty strokes in a minute; others, while they are at rest, have a pulse so quick, that it may be counted to 120: these are, however, extreme cases.

The degrees of irritability in different constitutions, every accident that happens to the body, and many affections of the mind, have great influence on the number of pulsations, so that a determination from the pulse *alone* will be generally very inaccurate.

A full, tense pulse, however, vibrating under the finger, accompanied with other symptoms of inflammatory fever, cannot often mislead us; although we have known such a pulse when a person has been in apparent good health.

An intermitting pulse always indicates considerable disturbance of the functions; and in most diseases is a symptom of considerable danger; it is also a symptom of old age.

A weak quick pulse in adults is often an indication of debility; so is a soft and slow one.

The diseased state of the pulse is to be judged of, not only by the number of pulsations, but by their fulness, hardness, &c., compared with their usual state when the patient is in health.

A person, whose natural pulsation is 60, when it becomes 80, unless it can be accounted for by exercise, sudden exhilaration or agitation, or by food or drink, is, most probably, labouring under some disease.

In general, all the pulsations of adults which are above 80, may be considered as indicative of disease, subject, of course, to exceptions. In many fevers the pulse is 96; in hectic fever 108; and in some highly inflammatory fevers 120 or more, in a minute.

The PULSE of HORSES in health is about forty strokes in a minute.

The horse's pulse is most conveniently felt in that branch of the carotid artery which passes under the jaw bone, in the temporal artery, or in the carotid artery in the lower part of the neck. It is said that an intermittent pulse in a horse is sometimes found when he does not labour under any serious disorder. This, however, we strongly doubt.

Pumice stone. See LAVA.

PUMP, an hydraulic machine for raising water, by means of the pressure of the atmosphere. See BAROMETER.

Among the great variety of pumps which have been invented, the latest, and, we understand, one of the best, is that by Mr. W. AUST, described in the 37th volume of the Transactions of the Society of Arts.

The *Chain-pump* consists of a long chain, equipped with a sufficient number of valves at proper distances, which, working upon two wheels, one above and the other below, passes downward through a wooden tube, and passes upward through another.

The *Air-pump* is a machine contrived for the purpose of abstracting the air out of proper vessels, in order to produce a vacuum. The principle on which the air-pump is constructed, is the elasticity of the air, as that on which the common or water-pump is founded, is the gravity of the same air. The structure of the air-pump is, in itself, more simple even than that of the water-pump. The latter supports two principles, gravity and elasticity: so that the water-pump must first be an air-pump: that is, must raise the air before it can raise the water. In effect, water being a dormant unelastic fluid, needs some external agent to make it ascend; whereas, air ascends by its own elasticity. The invention of this noble instrument, is ascribed to Otto Guericke, of Magdeburg, in 1654. A variety of improvements have been, from time to time, made upon it by **Boyle**, **Hawksbee**, and **Cuthbertson**.

Pumpion, or pumpkin. See **Gourd.**

PUNCH, a compound liquor, composed of sugar, acid, generally lemon-juice, and brandy, rum, or other spirituous liquor. We merely define this liquor to observe, that such mixtures, however agreeable to persons in health, should never be drunk by the valetudinarian and dyspeptic, as they are always accompanied with more or less inconvenience.

PUNCHEON, the name of a cask, used chiefly for holding rum, and containing generally about 130 gallons.

PUNCTUATION, the art of dividing a written composition into sentences, or parts of sentences, by points or stops, for the purpose of marking the different pauses which the sense requires.

Punctuation is not sufficiently attended to by the generality of epistolary writers. The best rules for punctuation are to be found in the writings of persons who are attentive to this branch of learning. But our best writers are not always attentive to this art; it very commonly devolves upon the printer to apply such punctuation as he thinks proper; and to the honour of printing, this is, in general, well done. We have paid some attention to this subject in the composition of our work, and trust that our own example will not be useless.

The *comma*, (,) represents the shortest pause; the *semicolon* (;) the next longer; the *colon* (:) still longer, and the *period* (.) a complete or full stop. The precise duration of these must depend chiefly on the degrees of slowness or rapidity observed in reading, and the nature of the subject.

A useful little *Essay on Punctuation*, by, we believe, a Mr. **Robinson**, was published some years since, which those who are desirous of becoming adepts in this useful art, would do well to study.

Puncture in Farriery. See **Quittor.**

PUNISHMENT has been usually defined any infliction or pain imposed in vengeance for a crime. Or in other words it may be said to be the infliction of evil upon a vicious being, not merely because the public advantage demands it, but because there is apprehended to be a certain fitness and propriety in the nature of things, that renders such suffering, abstractedly from the benefit to result, as the suitable concomitant of vice.

In punishment, however, as in other cases, the only measure of equity is utility; whatever is not attended with any beneficial purpose, cannot be just. If, therefore, in inflicting suffering on another, it is neither for his own benefit nor for the benefit of others, the infliction must be wrong. The mere indignation or horror which we conceive against vice, cannot justify us in putting any being to useless torture. Punishment, therefore, unless as a means of reform or prevention of crime, is peculiarly absurd.

But leaving these abstract opinions, what is the fact relative to crimes and punishments in this country. Do we find that imprisonment and punishment, whilst the *causes which produce crime are in active operation*, have that effect in preventing the commission of it, which we all most anxiously desire? On the contrary, is it not a fact, that, although heinous crimes have diminished in this country, more insidious and demoralizing ones have sprung up, and are, at this moment, preying upon the very vitals of the population?

That crimes and prosecutions for crimes, have increased during the present century in a frightful ratio, is beyond dispute. By official accounts, it appears, that in the year 1805, the number of criminals committed for trial in England and Wales, was 4,605, whereas in the year 1817, the number was 13,932. Of those in 1805, 350 were sentenced to death, 63 of whom were executed; of those in 1817, 1302 were sentenced to death, and 115 executed! The number of persons committed for crime, is not, we believe, at the present time, 1820, so great as in 1817; but it is still great, and imperiously demands some measures more effective than any which have been hitherto adopted for the prevention of the immoral pestilence. Coercion and punishment have been tried in vain: it is quite time to have recourse to a better and more benevolent system. The efforts of Sir JAMES MACKINTOSH, in the House of Commons, for the alteration of the penal laws, cannot be sufficiently applauded; but we are sorry to observe, that they do not appear to have been seconded with that zeal and energy which only can bring them to a successful and advantageous issue. Our penal code still requires much farther and more extensive revision and alteration. See CIRCUMSTANCES, EDUCATION, MIND, and PRISON.

PUNNING, the application of words or expressions, to meanings different from those which they commonly imply.

Some writers are fond of puns; wits, or would-be wits, who are not writers, much more so. The scintillation produced by odd and unexpected combinations of ideas in company, affords a sort of zest or cayenne-pepper for grown ladies and gentlemen, who are not contented with plain and ordinary stimulation. But there are many instances where such cayenne-pepper has been found, by far, too hot, and which has produced a sort of excoriation which required a long time to heal: and at last has left visible escars, which have never been either forgotten or forgiven.

Some persons fond of such sauce, mere wordy wits, would rather give pain and offence to others, than avoid a piquant remark in the shape of a pun. It may be questioned, however, whether the disposition for punning does not originate in a paucity of original thought. Punning is a practice, therefore, to which we advise the reader not to give way.

PUPIL, in anatomy, the dark, round opening in the middle of the eye, surrounded by the iris, which receives the rays of light. The pupil dilates, or is contracted according to the quantity of light which is thrown upon it: in the sun it appears very small, and in the dark very large. A dilated pupil is said to be a sign of a bad eye, and that this dilatation may be seen before the patient perceives any defect in the vision itself. See EYE and SIGHT.

Pur, or Purre. See LAPWING.

PURGATIVES, or PURGING MEDICINES, are such as evacuate the contents of the bowels by stool, and which are sometimes called cathartics.

Purgatives judiciously administered are the most useful and efficient medicines in the materia medica. They often prevent diseases, and as often remove those actually existing. The use of purgatives, however, requires caution and discrimination. See CATHARTICS, COSTIVENESS, and CLYSTERS.

Purgatives in Farriery. See ALOES, CATHARTICS, CLYSTERS, &c.

Purging balls for Horses. See ALOES.

PURPLE of CASSIUS, a precipitate of a purple colour, produced by a mixture of muriate of tin with a solution of gold; it is used in painting porcelain. See GOLD.

PURPLE FISH, or *Murex*, a genus of univalve, spiral, shell-fish; comprehending one hundred and eighty species, scattered over the different seas of the globe; seven or eight common to our own coasts. They are sub-divided into several sections. The following are the chief species: the *tribulus*, or Thorny woodcock, shell ovate, with a triple row of setaceous spines; inhabits Asia, America, and the Red sea: very rare. The *loco*, with sub-ovate shell; four or five inches long; a native of China; often eaten by the natives; contains a purple juice in a vesicle on the neck. The *despectus* has an oblong shell, five inches long, often found on our own coasts; shell coarse, white; fish sometimes eaten, oftener used as a bait for cod and ray-fish. The *tritonis*, or Musical murex, has a venticose, oblong, smooth shell; fifteen inches long; inhabits India and the South Seas; a second variety in the Mediterranean, used by the natives of New Zealand as a musical shell; and by the Africans and many nations of the east as a military horn. The *minutissimus*, inhabits the Welsh coast; the shell is very minute, elegant, and pellucid.

PURPLES, a term given by the vulgar to the livid spots which appear upon the skin in malignant fevers. See PETECHIÆ, and TYPHUS.

PURSLANE, or *Portulaca*, a genus of plants consisting of five species, natives of the East and West Indies, Egypt, and America. The *oleracea*, or Garden purslane, having a procumbent, succulent stem; and wedge-form, fleshy, entire leaves; seed round, black, was formerly used as a salad, but now very seldom.

PURSLANE, the SEA, ORACHE, or *Atriplex*, a genus of plants, comprehending sixteen species, scattered over Europe, Asia, and Africa; seven natives of our own country: the *portulacoides*, *pedunculata*, and *littoralis*, are found in salt marshes;—the *patula*, *angustifolia*, and *erecta*, on wastes and commons; and the *laciniata* on the sea sands. These plants are not used, that we know of, in this country: those which grow in salt marshes may, we think, be made useful in the production of soda.

PURSLANE, the TREE, or *Portulacaria*, a genus, of one species, the *afra*, or African purslane-tree; it has a succulent branched stem, about three feet high, with roundish, succulent, purplish-red leaves. It has not been known to blossom in this climate; it may be easily increased by cuttings of the stem or branches.

PUS, or MATTER, in medicine and surgery, a whitish, bland, cream-like fluid, heavier than water, found in phlegmonous abscesses, or on the surface of sores. It is distinguished, according to its nature, into laudable or good pus, scrofulous, serous, and ichorous pus.

No pus is formed without some previous inflammation of the part. It is sometimes of very great consequence, especially in cases of doubtful phthisis, to distinguish pus from mucus. In order to effect this, let the expectorated matter be dissolved in vitriolic acid, and in caustic, alkaline lixivium, and add pure water to both solutions. If there be a fair precipitation in each, we may be sure that some pus is present. But if there be no precipitation in either, it is a certain test that the mixture is entirely mucus. If the matter cannot be made to dissolve in alkaline lixivium, by time and trituration, we have reason also to believe that it is pus.

PUSTULE, a little pimple, or elevation of the cuticle, sometimes globate, sometimes conoidal in its form, and containing pus, or a lymph which is, in general, discoloured.

PUTEOLANA, a genus of earths, consisting of alumina, silica, and iron, with generally some carbonate of lime; it is friable; mixed up with water and quick lime, becoming hard, so as not to be penetrated by water; easily melts in the fire into a black scoria. Three species:

The *Genuina*, Puzzolana, Pozzolano, or Ponzolano, is found in the volcanic mountains of Italy; colour dull red, brown, or black; with a small portion of lime it makes an excellent mortar, which hardens even under water. The *assimilis* is found in France, Germany, and Franconia. The *cineres*, or volcanic ashes, is found in the neighbourhood of most volcanic mountains.

PUTREFACTION, the spontaneous process of decomposition which takes place in all the soft parts of animals, and in some vegetables, under suitable circumstances of temperature and moisture, by which they are finally disorganized, and are chiefly resolved, when with access of air, into a variety of gaseous compounds.

The term putrefaction is, however, commonly confined to animal matter. The changes which take place in this, by the process of putrefaction, or of the putrid fermentation, as it has been sometimes called, require a due temperature, and the presence of moisture: for below the freezing point of water, or when perfectly dry, it undergoes no alteration.

During putrefaction the parts become soft and flabby, they change in colour, exhale a nauseous and disgusting odour, diminish considerably in weight, and afford several new products, some of which escape in a gaseous form, others run off in a liquid state, and others are contained in the fatty or earthy residuum.

The presence of air, although not necessary to putrefaction, materially accelerates it; and those gases which contain no oxygen are very efficient in checking, or altogether preventing the process. Carbonic acid also remarkably retards putrefaction; and if boiled meat be carefully confined in vessels containing that gas, it remains for a very long time unchanged.

Several substances, by forming new combinations with animal matter, retard or prevent putrefaction; such as many of the saline and metallic compounds; sugar, alcohol, volatile oils, and many other substances also stand in the list of anti-putrefactives, though their mode of operation is by no means understood. We are informed that fresh animal food, plunged into a cask of sugar, will keep for a great while fresh and good.

The effluvia arising from putrescent substances, and more especially those generated in certain putrid disorders, have a tendency to create peculiar diseases, or to give the living body a tendency to produce poisons analogous to themselves. An atmosphere, thus tainted by infectious matter, may be rendered harmless by fumigation with the volatile acids, more especially the nitrous and muriatic; chlorine is also very effectual; the vapour of vinegar, though sometimes useful in covering a bad smell, is not to be relied on. It appears, however, that one of the best preventives of disease produced by putrescent matter is CLEANLINESS and VENTILATION. See BARM, CHARCOAL, CONTAGION, PLAGUE, and TYPHUS.

When muscular flesh is immersed in a stream of running water, it is partially converted into a substance having many of the properties of fat, combined with ammonia. The same changes have been observed where large masses of putrefying animal matter have been heaped together, or where water has had occasional access to it. The white substance, thence produced, has been compared to spermaceti; and attempts were made, some years since, to convert the flesh of horses into this matter, but from the offensive smell which such matter possesses, or from some other causes, the attempts have been abandoned.

Putrid Fever. See TYPHUS.

PUTTY, a white powder obtained by calcining an alloy of equal parts of tin and lead. This substance constitutes the base of most of the opake enamels.

The PUTTY of glaziers is chalk or whiting, beaten up into a ductile paste with linseed oil; some persons mix with it a small portion of ground white lead. It is used for the purpose of fastening glass into sashes.

Puzzolana. See PUTEOLANA.

PYLORUS, in anatomy, the inferior aperture of the stomach, which opens into the intestines.

Pyracantha. See THORN.

PYREXIA, a fever. See FEVER.

PYRITES, in mineralogy, a name formerly given to a sulphuret of iron, but now it is also applied to combinations of arsenic and sulphur, and of copper and sulphur.

The *common pyrites* is a sulphuret of iron, and is found massive and crystallized in a variety of forms, chiefly the cube. It often occurs in nodules. Its colour is different shades of brass yellow. *Magnetic pyrites* is not found crystallized; its colour is generally brown, whitish, or yellow; it is not a common mineral. The principal use of iron pyrites is in the formation of green vitriol. See SULPHATE OF IRON.

PYROLIGNOUS ACID, an acid obtained by the distillation or combustion of various kinds of wood. It is found to be precisely of the same nature as the acetic acid. See VINEGAR.

PYROMETER, a machine contrived to measure the alteration in, and dimensions of, metals and other solid bodies arising from heat.

Various pyrometers have been contrived by MUSCHENBROCK, SMEATON, FERGUSON, DE LUC, and WEDGWOOD. Wedgwood's consists in a cube of clay, and the degree of heat is measured by its shrinking This is, however, said not to be an invariably good test.

PYROPHORUS, a spontaneously inflammable compound, which is made thus: Mix equal parts of honey or of brown sugar, and powdered alum; melt the mixture in an iron ladle, and keep it stirred till dry; reduce the dry mass to powder, and introduce it into a common phial, coated with clay, and placed in a crucible of sand. Give the whole a red heat, and when a blue flame appears at the neck of the phial, allow it to burn a few minutes, then remove it from the fire, stop the phial, and allow it to cool, taking care that the air cannot enter.

This has been usually called *Homberg's pyrophorus.* It is used in the arts for similar purposes as phosphorus.

Pyrotartarous acid. See TARTAR.

Q.

QUACKERY, the pretension to, and the practice of, any art or science, without knowledge or judgment, and without any rational principles. The term is chiefly applied to pretenders to the knowledge and practice of medicine.

Quackery of every kind is so exceedingly injurious to mankind, that no arguments of ours are required to enforce this truth. But the chief difficulty relative to quackery, in all science and art, as well as medicine, is to distinguish the quack from the genuine and sincerely scientific. It is to be lamented that quackery is not confined to the illiterate part of the community. Many persons professedly scientific, as well as many physicians, are too often *mere quacks*; and such quacks too, as from the imposing attitude which they present, are more mischievous than the more vulgar and ignorant pretender, whose qualities and craft are conspicuous and evident. Relative to health, mankind, unfortunately, are too willing to be deceived. This disposition has contributed to make more quacks, both in and out of the profession, than any thing else; and until we can make up our minds to hear and to bear the truth, the reign of quackery will not terminate. There is something very fascinating in mystery; but we may generally conclude that where mystery begins, there good sense, as well as common sense, most usually ends. The remedy for the evils of quackery is very simple, and rests with ourselves: quacks should never be encouraged, either by a purchase of their nostrums, or their pretended knowledge; INTEREST, it should be remembered, is their pole-star. See the next article.

QUACK-MEDICINES, those medicines which are sold in the shops as a specific remedy for some disease, or under the name of some person, either fictitious or real, accompanied also with printed directions for their use, and to which are affixed *stamps* according to law.

Although we protest against quackery of every kind, we are obliged to admit, that the quack has occasionally blundered upon medicines which are useful. The composition of some few we have described in the order of the alphabet; perhaps the best service we can render our readers will be, instead of a dissertation on the evils of quackery, to give them a concise detail of the composition of the most popular quack-medicines, by which they will be better enabled to judge of their several pretensions, and to know to what credit they can, or ought to be entitled.

Ague Drops, called also *Fowler's arsenical solution:* Take of white arsenic, in fine powder, and of sub-carbonate of potash, from tartar, of each sixty-four grains; of distilled water one pint. Boil them together in a glass vessel, until the arsenic is entirely dissolved; when cold add of compound spirit of lavender four fluidrachms; lastly add to the solution as much more distilled water as may be requisite to make it exactly fill a pint measure. This is the form of this medicine ordered by the London College. The dose is, for adults, twelve drops, three times a day; for stout boys from ten to twelve drops; young boys and girls, from seven to ten drops; for children under seven years, from five to seven drops; and for those from two to four years, from two to five drops. See AGUE and ARSENIC.

Anderson's Pills. See SCOTS PILLS, below.

Anodyne Necklace: The roots of henbane strung in the form of beads.

Antivenereal Drops. Muriate of iron, with a small proportion of corrosive sublimate.

Balsam of honey. Tincture of benzoin, or tolu.

Balsam of Liquorice. Compound tincture of camphor, with a small portion of oil of aniseed. See CAMPHOR.

Barclay's antibilious pills. Take of extract of colocynth two drachms; of resin of jalap one drachm: of almond-soap one drachm and a half; guaiacum three drachms; of emetic tartar eight grains; of the essential oils of juniper, carraway, and rosemary, each four drops; syrup of buckthorn sufficient to form a mass, which divide into sixty-four pills.

Bateman's Drops. See BATEMAN'S DROPS.

Baume de Vie. See BAUME DE VIE.

Black Drop: Take half a pound of opium sliced; three pints of good verjuice, and one ounce and a half of nutmegs, and half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonfuls of yeast. Set the whole in a warm place, near the fire, for six or eight weeks, then place it in the open air till it become a syrup; lastly, decant, filter, and bottle it up, adding a little sugar to each bottle. One drop of this preparation is considered equal to about three of the tincture of opium, described under OPIUM.

This preparation was long a supposed secret, but a similar one is described by Van Helmont, two hundred years ago. It appears that the acid combines with the morphia of the opium, and forms an acetate of morphia. It is said that the black drop is not only more powerful but less distressing in its effects than any other narcotic combination. The *sedative liquor of opium,* prepared by BATLEY, is supposed to owe its properties to the combination of opium with some vegetable acid, and to be derived also from Van Helmont's writings.

British oil. See BRITISH OIL.

Brodum's Nervous Cordial, consists of the tinctures of gentian, columba, cardamoms, and bark, with the compound spirit of lavender, and wine of iron.

Cephalic snuff. The basis of this is asarabacca, diluted with some vegetable powder.

Chamomile Drops. Spirit of wine, flavoured with essential oil of chamomile.

Charcoal, Lardner's prepared, consists of prepared chalk finely powdered, and rendered grey by the addition of charcoal.

Chelsea pensioner. Take of gum guaiacum one drachm; rhubarb two drachms; cream of tartar one ounce; flowers of sulphur two ounces; one nutmeg. The whole must be finely powdered, and made into an electuary with clarified honey. Dose, two spoonfuls night and morning. Given for rheumatism.

Cheltenham Salts. A factitious com-

pound has been long sold, as a purgative, under this name, which is said to be very efficacious, and by some even thought superior to the salts obtained from the Cheltenham water itself. It is prepared by rubbing together the following salts; sulphate of soda one hundred and twenty grains; sulphate of magnesia sixty-six grains; muriate of soda ten grains; sulphate of iron half a grain.

Ching's worm lozenges. These are of two kinds; the *yellow* and the *brown* lozenge. The *yellow* lozenges are made thus: Take of saffron half an ounce; of water one pint; boil and strain; add one pound of calomel, white sugar twenty-eight pounds; mucilage of gum tragacanth as much as is sufficient to roll out to an exact thickness, so that each lozenge may contain one grain of calomel.

The *brown* lozenges are made thus: Take of calomel seven ounces; resin of jalap three pounds and a half; white sugar nine pounds; mucilage of gum tragacanth a sufficient quantity so that each lozenge may contain half a grain of calomel.

The yellow lozenges are taken in the evening, the brown the succeeding morning. Doses from one to six.

Cough Drops, of which various kinds are advertised from time to time, are generally some preparation of opium. See BLACK DROP above.

Daffy's Elixir. See DAFFY'S ELIXER.

Dalby's Carminative. See DALBY'S CARMINATIVE.

Dixon's antibilious pills, are composed of aloes, scammony, rhubarb, and emetic tartar.

Dinner pills, Lady Webster's, or *Lady Crespigny's pills:* Take of aloes six drachms; of mastiche and red roses, of each two drachms; of syrup of wormwood a sufficient quantity to make a mass. To be divided into pills of three grains each.

Dutch, or Haerlem Drops, are obtained by distilling oil of turpentine in a glass retort, till a red balsam is left, which is the drops. A mixture of oil of turpentine, guaiacum, spirit of nitric ether, with small portions of oil of amber and cloves, is sometimes sold for dutch drops.

Eaton's Styptic. Calcined green vitriol half a drachm; proof spirit, tinged yellow with oak bark, one pint.

Eau medicinale de Husson. Notwithstanding all the attempts to discover the composition of this medicine, it is still in great obscurity. It has been asserted that it is a wine of meadow saffron; but this is doubtful. Some suppose that it is either a composition of meadow saffron and henbane, or meadow saffron and white hellebore. See MEADOW SAFFRON.

Essence of Colt's foot. See CAMPHOR.

Essence of mustard, Whitehead's, is kept in two forms. The liquid essence of mustard consists chiefly of oil of turpentine, in which has been infused mustard seed; and an addition of camphor and spirit of rosemary.

The pills, or solid essence of mustard, is chiefly composed of gum guaiacum.

Friar's Balsam. See BENZOIN.

Godfrey's Cordial. See GODFREY'S CORDIAL.

Golden Ointment, or Singleton's Ointment. See OINTMENT.

Gout Tincture, Wilson's. An infusion of meadow-saffron.

Gowland's Lotion: Take of bitter almonds one ounce; sugar two ounces; distilled water two pints; beat them together into an emulsion, and strain; then add of corrosive sublimate two scruples, previously ground, with two liquidrachms of rectified spirit of wine. This is a powerful but dangerous application to some cutaneous eruptions.

Green's Drops. The basis, corrosive sublimate.

Greenough's Tincture for the teeth. Take of bitter almonds two ounces; Brazil wood, cassia buds, and orris root, of each two drachms; of cochineal, salt of sorrel, and alum, of each one scruple; rectified spirit of wine, two pints; spirit of horse-radish half a fluidounce. Digest for fourteen days and strain.

Grindle's cough drops. A tincture made with rectified spirit of wine, opium, and other stimulant materials.

Hooper's female pills. Dissolve eight ounces of sulphate of iron in half a pint of water; to which add two pounds eight ounces of Barbadoes aloes; and six ounces of canella bark; two ounces of gum myrrh; and three drachms of gum opopanax, all in powder. Beat them together into a mass.

Hudson's preservative for the teeth and gums. Take equal parts of tincture of myrrh, tincture of bark, and cinnamon water; to which add a small portion of arquebusade water, and gum Arabic.

Huxham's tincture of bark. See PERUVIAN BARK.

James's Powder. See JAMES's POWDER.

James's analeptic pills, consist of equal parts of James's powder, ammoniacum, and the pill of aloes, with myrrh; (see PILLS) with a sufficient quantity of tincture of castor to make a mass.

Jesuit's Drops. See BENZOIN.

Madden's vegetable essence, is little else than the infusion of roses. See ROSES.

Marsden's antiscorbutic drops, is a solution of sublimate in an infusion of gentian.

Norris's Drops. A spirituous solution of emetic tartar.

Norton's Drops. A disguised solution of corrosive sublimate.

Opodeldoc. See LINIMENT.

Oxley's Essence of Ginger: a mere solution of ginger in rectified spirit of wine.

Paregoric Elixir. See CAMPHOR.

Portland Powder. See PORTLAND POWDER.

Refined Liquorice, is usually made by evaporating a solution of the pure extract of liquorice, or Spanish juice, with half its weight of gum Arabic, rolling the mass, cutting it into lengths, and afterwards polishing it; but it is sometimes said to be adulterated with glue, &c.

Riga Balsam, is prepared from the shoots of the *Pinus cembra,* previously bruised and macerated for a month in water.

Ruspini's Tincture for the teeth: take of orris root eight ounces; cloves one ounce; ambergris one scruple; rectified spirit of wine two pints. Digest for fourteen days and strain.

Rymer's Cardiac Tincture: a disguised tincture of allspice.

Scots Pills. Take of Barbadoes aloes, in powder, one pound; of black hellebore root, jalap root, and sub-carbonate of potash, of each, in powder, one ounce; of oil of aniseed half a fluid ounce; simple syrup sufficient to make a mass.

Seidlitz powders. The white paper consists of two drachms of tartarized soda, and two scruples of carbonate of soda; the blue paper contains thirty-five grains of tartaric acid. The contents of the white paper are to be dissolved in half a pint of spring water, to which those of the blue paper are to be added, and the draught is to be taken in a state of effervescence. This is esteemed a grateful and efficacious purgative.

Selway's Essence of Senna, is a concentrated infusion of senna, in combination with an alkaline salt, and is said to be well adapted for domestic use as a purgative.

Singleton's eye salve. See OINTMENTS.

Sodaic powders, are contained in two distinct papers, one white the other blue: the former contains half a drachm of the carbonate of soda; the latter twenty-five grains of tartaric acid. These powders require half a pint of water. This mixture is, however, a bad imitation of the soda water so highly impregnated with carbonic acid, and sold every where in the shops.

Spilsbury's antiscorbutic drops. Corrosive sublimate two drachms; prepared sulphuret of antimony one drachm; gentian root, and orange-peel, of each one drachm; shavings of red sanders one scruple; proof spirit one pint. Digest for a fortnight and strain.

Squire's elixir, is opium, camphor,

anise, and fennel-seeds, made into a tincture, and coloured with cochineal.

Steers's opodeldoc. See STEERS'S OPODELDOC.

Storey's worm cakes are composed of calomel and jalap, and coloured with cinnabar.

Stoughton's elixir. See GENTIAN.

Turlington's balsam. See TURLINGTON'S BALSAM.

Velno's vegetable syrup. Its real composition unknown: but supposed to consist of corrosive sublimate, antimony, ammonia, and subcarbonate of potash, rubbed up with honey and mucilage.

Ward's paste for fistula, piles, &c.: Take black pepper and elecampane-root of each in powder, four ounces; of fennel-seeds in powder one pound and a half; of honey and sugar of each half a pound. Beat all well together. Dose, size of a nutmeg, three times a day.

Ward's white drops. Prepared by dissolving mercury in nitric acid, and adding a solution of muriate of ammonia; or they are made with a solution of corrosive sublimate, with muriate of ammonia.

The composition of many other quack medicines might be added to this list, but we have made it, we presume, sufficiently extensive to show our readers the real nature of these mysterious compounds.

QUADRANT, a mathematical instrument of great use in astronomy and navigation, for taking the altitudes of the sun and stars; and also for taking angles, in surveying heights and distances, &c.

Quadrants are of various kinds: the common, or surveying quadrant; the astronomical quadrant; Cole's quadrant; Adams's quadrant; Collins's, or Sutton's quadrant; Davis's quadrant; Gunner's quadrant; Gunter's quadrant; Hadley's quadrant, &c.

QUADRUPED, or *Quadrupes*, an animal having four feet; it is, however, more commonly applied to those animals which have four feet, a hairy body, produce viviparously, and suckle their young, such are the horse, ox, lion, &c.

Quail. See PARTRIDGE.

QUAMOCLIT, or *Ipomœa quamoclit*, a species of the SCARLET CONVOLVULUS, or *ipomœa*, a genus of plants, consisting of twenty-eight species, chiefly natives of the West Indies and South America, many of India; one or two of the Cape.

The *Quamoclit*, or Indian pink, with axillary red flowers, is an annual plant, but will not bear the open air of this country. It is best propagated by seeds sown in a hot-bed. In favourable seasons, they may be transplanted into borders.

One or two of this genus are perennial.

QUAKING-GRASS, or *Briza*, a genus of plants comprehending seven species, chiefly natives of Europe, and several of our own country. The *minor* and *media*, are both found wild in our meadows. The last is eaten by cattle, and makes tolerable hay,

QUARANTINE, the time which a ship, suspected to contain the infection of the plague, or other pestilential disease, is restricted from intercourse with the shore. The term literally implies the period of forty days, but it is also often applied to any term in which the ship is restricted from intercourse with the shore, in consequence of supposed pestilence.

Quarantine may be ordered by the king, with the advice of the privy-council, at such times, and under such regulations, as he judges proper. Ships ordered on quarantine, must repair to the place appointed, and must continue during the time prescribed, generally six weeks; and must have no intercourse with the shore, except for necessary provisions, which are to be conveyed with every possible precaution.

By the 45th Geo. 3. c. 10, particular regulations are instituted relative to quarantine, but we cannot detail them. It empowers the lords of the treasury to erect a lazaret upon Chetney hill in Kent, to which, under certain circumstances, persons are to repair, &c.

And by an order in council, dated 5th of April, 1805, and various subsequent orders, the mode of performing quarantine is further regulated.

The penalties for a breach of the quarantine laws, are exceedingly great. See Plague

QUARTAN, a term applied to the ague, in which the fit comes on every fourth day

QUARTER EVIL, or **Quarter ail**, called also **Black legs**, and a variety of other names, a disease incident to young cattle, from one to two years of age. It is generally caused by putting young animals into too rich pasture, and is considered in its first attack, a highly inflammatory disease.

The first symptoms are heaviness and disinclination for food; a swelling of the body soon takes place, generally beginning in the legs, and proceeding upward; on feeling the swelling, a crackling is perceived under the skin; the swelling sometimes extends to the loins and belly; the joints are sometimes affected, causing severe lameness. It is a very dangerous disease, and most commonly proves fatal.

Bleeding is the best remedy, if applied early; and also purgatives. See Glauber's salts. Scarification of the swollen parts, will also be of service; after which, they should be dressed with equal parts of common salt and nitre, finely powdered, by which means suppuration will be induced.

But the best remedy is *prevention*, in carefully avoiding the high feeding of young cattle, by which the disease is usually produced.

The various remedies found in books of farriery, are, generally, worse than useless. In the first stage of the disease, no hot or spicy medicines whatever should be given.

QUARTZ, or **Rock-crystal**, a genus of siliceous earth, twenty-four species of which have been described. Its specific gravity is 2.6. It crystallizes in the form of a six-sided prism ended by six-sided pyramids; some varieties are perfectly transparent and colourless, others white, and more or less opaque. It is so hard as to give sparks when struck with steel, and is nearly infusible. The primitive crystal, which is very rare, is an obtuse rhomboid. The finest specimens are brought from Madagascar and the Alps. Some of the perfectly transparent crystals found near Bristol and Cornwall, are sometimes called Bristol and Cornish diamonds. *Rock-crystal*, and other fine specimens of *pebbles, chalcedony, cornelian, onyx, blood-stone, and agate,* are chiefly composed of quartz. Quartz may be considered as pure silica. See Flint. Quartz is one of the chief components of granite. See Granite.

Quartz is sometimes met with in mountain masses, which usually present a conical appearance. The quartz is milk-white, and of a more or less granular texture. The Sugar-loaf mountains, near Dublin, the Paps of Jura, in Argyleshire, and some of the mountains of Sutherland and Caithness, present instances of this formation.

QUASSIA, a genus of trees, consisting of three species, as follow:

The *Excelsa*, grows naturally in the woods of Jamaica and the Caribbean islands, where it is called the bitter ash, and flowers in October and November. It is a beautiful tall tree, sometimes rising one hundred feet in height, with a trunk straight, smooth, and tapering, and often ten feet in circumference, near the base; the bark is smooth, grey; leaves pinnate; the leaflets oblong and pointed; the ribs reddish; flowers small, yellowish green; fruit, a black drupe, round, size of a pea, but not bitter.

The wood, which is inodorous, is of a yellow colour, and an intensely bitter taste; alcohol and water take up its bitterness, which, when evaporated to dryness, becomes a somewhat transparent brittle extract. See Bitters.

Quassia is tonic, and has been found efficacious in dyspepsia, and nervous irritability, intermittent and bilious, remittent fevers, chlorosis, diarrhœa, and gout. Combined with nitric acid, it has been beneficial in typhus and fluor albus. It may be given in substance in doses of from ten grains to one drachm; but infusion is the best form of administering it.

Infusion of quassia. Take of quassia-wood chipped one scruple; of boiling water half a pint. Macerate for two hours in a lightly-covered vessel and strain. The dose is from one to three fluid-ounces given twice or thrice a day, combined with purgatives, valerian, chalybeates, &c. according to circumstances.

Quassia is, it is said, used by the brewers in large quantities, instead of hops; and it is also said, that the malt-liquor so made, will not keep as well as that made with hops. But as we are not aware that any accurate and comparative experiments have been made to determine the fact, we must still be permitted to entertain doubts upon this subject. See BREWING and HOPS.

The *Simaruba*, Simaruba, or simarouba quassia, or mountain damson, is a native of South America, Carolina, and the West India islands. It is a tall tree, with a smooth grey bark, which is spotted with yellow; leaves pinnate, deep green above, whitish beneath; flowers yellowish white; fruit five smooth, ovate, black, one-celled berries.

The bark of the root is the part used medicinally; it is brought to this country in long pieces, a few inches in breadth. It is yellow in the inside, when fresh; of a fibrous texture, inodorous, and has a bitter, but not disagreeable taste. Alcohol and water, take up all its active matter by simple maceration, at a temperature of 60°, better than at a boiling heat. The infusion is stronger than the decoction. Simaruba is tonic, and has been employed with advantage in intermittent fever, obstinate diarrhœa, dysentery, and dyspeptic affections. It may be combined with aromatics and opium. The dose in substance, is from one scruple to half a drachm; but it is most commodiously given in *infusion*, which may be made thus: Take of simaruba bark bruised, half a drachm; boiling water half a pint. Macerate for two hours in a lightly-covered vessel and strain. Nitrate of silver, oxymuriate of mercury, superacetate of lead, infusion of galls, catechu, and yellow Peruvian bark, occasion precipitates in this infusion, and should, therefore, not be given with it. The dose is two fluidounces, combined with tincture of opium, or an aromatic.

Notwithstanding its high character, this medicine is very rarely employed in this country.

The *Amara* is said to be a native of Surinam, as well as South America generally; is less tall than either of the preceding. It was, till lately, erroneously supposed to produce the quassia-wood now known to be obtained from the *excelsa*. This is a very rare tree, and excels all the others in bitterness.

Another kind of tree, called PICRANIA AMARA, or Bitter-wood tree, has been described, which is so similar in its properties to quassia, that it does not demand a separate article. It is a tall and beautiful timber-tree, common in the woods of Jamaica. Every part of it is intensely bitter. And it is said to be superior to quassia in its medical properties. The wood is also very useful for cabinet work, as no worm will live near it.

Queen of the meadows. See DROPWORT.

Queen's violet. See ROCKET.

Quicken-tree. See PEAR.

Quick lime. See LIME.

Quick-set-hedge. See THORN.

QUICKSILVER, MERCURY, *Hydrargyrus*, or *Argentum vivum*, is a brilliant metal, of a silvery-white colour, liquid at all common temperatures, solid and malleable at 40° below zero, and gaseous at 670°. Its specific gravity is 13,5. It has been known from the remotest ages.

The principal ore of this metal is the *sulphuret*, or native cinnabar, which is of various colours, sometimes steel grey, at others a bright red, from which the mercury is separated by distillation with quick lime or iron filings. It is sometimes found also in its fluid state; and in silver and lead ores, as well as mixed with white oxide of arsenic. It is obtained from various parts of the globe: Spain, Sweden, Hungary, Germany, Sicily, France, Siberia, China, Japan, Sumatra, Peru, Chili, New Spain, &c.

The greater part of the quicksilver used in this country is brought from Germany, in leathern skins packed in casks; some is brought from the East Indies in earthen globular jars, packed in boxes. It is often adulterated with an admixture of lead, bismuth, zinc, or tin. When it quickly loses its lustre, is covered with a film, or is less fluid than usual, leaves a stain on a delf plate, or does not readily divide into round globules, but into those with tails it may be suspected. It is purified by distillation with iron filings; or by agitation in dilute sulphuric acid, until the acid ceases to become turbid; and then, after washing and drying the globules into which it has been divided, passing them through a pin-hole in the bottom of a funnel of writing paper. Its passing through shammy leather is no test of its purity.

Mercury combines with many of the metals, and forms a class of compounds which have been called *amalgams*. These are generally brittle and soft. One part of potassium with 70 of mercury, produce a hard and brittle compound. If mercury be added to the liquid alloy of potassium and sodium, an instant solidification ensues, and heat enough to inflame the latter metal is evolved. An amalgam of zinc and mercury is used for electrical purposes; one of tin and mercury for silvering looking glasses. See LOOKING GLASS. The amalgams of gold and silver are employed in gilding and plating.

Mercury is used for various important purposes in the arts, as well as in chemistry and medicine. It readily becomes oxidated by exposure to air, and by trituration.

In its metallic state it exerts no action on the animal system, but when combined with oxygen, acids, and some other bodies, it is a powerful medicine, and sometimes a destructive poison. The preparations and combinations of mercury are almost innumerable: we can only notice the most important.

There are two oxides of mercury, the *black*, or *protoxide*, which may be obtained by long agitation of the metal in contact with oxygen, or by washing calomel with hot lime-water; it is insipid and insoluble in water. It exists in the *blue pill*, see below, and in *mercurial ointment*. See OINTMENT.

The *red*, or *peroxide* of mercury, is produced by exposing the metal in a flat-bottomed, long-necked matrass, on a sand heat, nearly to its boiling point, to the action of air. It becomes coated with red scales, spangles, and crystals, and is ultimately converted into a red shining mass. It has an acrid metallic taste, and is poisonous. When heated it acquires a black colour, but becomes red again on cooling; at a red heat it evolves oxygen, and is reduced to the metallic state. It is rarely given internally; it is used externally for the same purpose as the nitric oxide of mercury. See below.

Mercury and chlorine combine in two proportions: these compounds are usually called CALOMEL and CORROSIVE SUBLIMATE. See these articles.

Nitric oxide of mercury, commonly called *red precipitate*, is made thus: take of purified mercury three pounds; of nitric acid one pound and a half; of distilled water two pints. Mix in a glass vessel, and boil the mixture in a sand-bath until the mercury being dissolved and the water also evaporated, a white mass remains. Rub this into powder, and put it into another shallow vessel, then apply a moderate heat, and raise the fire gradually until the red vapour ceases to arise.

This preparation is a subnitrate of mercury; it is in small scales of a bright red colour, very acrid and corrosive. It is never given internally, but is applied as a useful stimulus to old sores, and for destroying fungous flesh. As a powder, in the proportion of half a grain to four grains of sugar, it is blown into the eye to remove specks on the cornea. See BASILICON, and OINTMENT.

For *black sulphuret of mercury*. See **Ethiop's Mineral.**

Red sulphuret of mercury, or *Factitious cinnabar*. Take of purified mercury forty ounces; of flour of sulphur eight ounces. Having melted the sulphur over the fire, mix in the mercury, and as soon as the mass begins to swell, remove the vessel from the fire, and cover it with force to prevent it from catching fire; then rub the mass to powder and sublime it.

Thus prepared, it forms a dark red cake, with a shining striated appearance, and when reduced to powder, assumes a rich red colour, and is then called **Vermilion.** It is sometimes shamefully adulterated with red lead. It is used, as is well known, as a beautiful pigment.

It is rarely used medicinally; when given internally, the dose is from ten grains to half a drachm: it is said to be useful in cutaneous diseases, gouty and rheumatic affections, and worms.

Mercury with chalk: take of purified mercury three ounces; prepared chalk five ounces; rub them together till the globules disappear. This is said to be alterative and useful in scald head, and other cutaneous affections; it is a useful alterative for children. The dose may be from five grains to half a drachm twice a day, mixed with any viscid substance.

It is known in domestic economy as a useful powder for polishing plate.

The preparation of *white precipitate of mercury*, or white precipitate, we need not describe. It is only used externally as an ointment, in the proportion of one drachm to an ounce and half of lard, for some cutaneous eruptions, particularly the itch. Its use, however, requires caution.

Mercurial pills, commonly called the *blue pill*. Take of purified mercury, by weight, two drachms; confection of the red rose three drachms; liquorice root powdered one drachm. Rub the mercury with the confection until the globules disappear; then add the liquorice root, and beat the whole together until they are thoroughly incorporated.

These pills are stimulant and antisyphilitic, and are the most common form under which mercury is exhibited for the cure of venereal affections. The dose is from six to eight grains, or two pills twice a day till the mouth is affected. Larger doses are apt to excite purging.

For the treatment of persons who have taken any of the preparations of quicksilver as a poison, or by mistake, see **Corrosive Sublimate,** and **Poisons.**

QUILLS, the large feathers taken out of the end of the wings of geese, swans, crows, &c. They are denominated from the order in which they are fixed in the wing: the second and third quills are the best for writing. Crow quills are chiefly used for drawing. The constituent of quills is chiefly albumen.

To harden a soft quill, thrust the barrel into hot ashes, stirring it till it is soft; then taking it out, press it almost flat upon your knee with the back of a penknife, and afterwards reduce it to roundness with your fingers. Or set water and alum over the fire, and while it is boiling, put in a handful of quills, the barrels only, for a minute, and then lay them by.

A thousand quills, in commerce, consists of twelve hundred. They are judged of by their size and weight. Particular attention should be paid on purchasing quills, that they are not left-handed: that is, not of the left wing.

QUINCE-Tree, or *Pyrus Cydonia.* We have described this tree, and the mode of its propagation, under **Pear,** to which, therefore, we refer. We shall here only consider the quince medicinally, merely adding that the Portugal quince is most esteemed.

The seeds of the quince are the parts employed. They contain a considerable quantity of mucus, which is extracted by boiling water thus:

Decoction of quince seed: take of quince seeds two drachms; water, a pint. Boil them over a gentle fire for ten minutes, and strain. Alcohol, acids, and most of the metallic salts, coagulate the mucus thus obtained, they should, therefore, not be mixed with it. It must also be used as soon as it is made, as it soon spoils. It is used as a gargle in aphthous affections, and ulcerations of the mouth; and as a local demulcent in tenesmus. A diluted solution of it inserted beneath the eyelids, is useful to obtund the acrimonious discharge in violent inflammations of the eye.

QUINSY, or *Cynanche*, a sore throat. There are various kinds of this complaint. See Croup, Mumps, and Sore Throat.

QUINSY, or Sore Throat of Horses, is often a symptom of catarrh or cold. The chief symptom is great pain and difficulty of swallowing, and generally accompanied with fever. Bleed freely, then blister the throat. The head should also be steamed frequently; and the horse should be offered some good gruel very often. No medicine should be forced down the throat until the soreness is quite gone, and the animal can swallow freely; a laxative may then be given; or small doses of nitre and emetic tartar.

QUITTOR, or Quitter, a fistulous sore, in the coronet of the horse's foot, generally on the inside. It is caused by bruises, or by matter forming in the lower parts of the foot, from pricks in shoeing, bruises from gravel, neglected corns, &c.; and having no vent below, working its way upward to the coronet.

In slight cases, it will be sufficient to apply a solution of blue vitriol by means of a syringe; in more severe cases the opening must be enlarged, and the callous edges of the sinus be destroyed by some strong caustic: corrosive sublimate is very effectual. It may be applied by moistening a narrow slip of paper with butter of antimony, strewing the powdered sublimate upon it, and twisting the paper so as to bring it to a point. This must be forced into the sinus with a whalebone probe. In a few days a core will come out, and leave an open, healthy-looking sore, which must be dressed daily with a solution of blue vitriol, or compound tincture of myrrh. In some cases the actual cautery will be necessary; and a stimulating poultice may, also, sometimes be of service.

Quittor-bone. See *the preceding article.*

QUOTIDIAN, a term applied to an ague, or intermittent fever, the paroxysms of which return every day.

R.

R, or R/, is placed at the beginning of a physician's prescription, and implies *recipe*, or take. See Recipe.

Rabbit. See Hare.

Rabies canina. See Bite of a Mad-dog, and Hydrophobia.

Rack. See Arrack.

Rack. See Stable.

Racoon. See Ursus.

RADIANT MATTER. If a solar beam be refracted by a prism, and the coloured image received upon a sheet of paper, it will be found, on moving the hand gently through it, that there is an evident increase of temperature towards the red ray. If the coloured rays be thrown successively upon delicate thermometers, it will be found that, if the heating powers of the violet rays be considered as 16, that of the green rays will be 26, and of the red 55. These circumstances suggested the possibility of the heating power of the spectrum extending beyond the red ray; and experiment has proved that a thermometer in the red ray rose 7° in ten minutes; but just beyond the red ray the rise was 9°. It is evident, therefore, that independent of the illuminating rays, there are others which produce increase of temperature; they are also possessed of less refrangibility than the visible rays. That these calorific rays are susceptible of refraction and reflection is proved by the intense heat produced when the solar rays are concentrated into a focus by a lens, or by a concave mirror.

The radiant matter emitted by terrestrial bodies at high temperatures, agrees, in many of its properties, with that constituting the solar rays; but in other respects it presents material differences. The effect we perceive in approaching a fire, chiefly results from radiation; and if a concave *metallic* mirror be held opposite the fire, a heating and luminous focus will be obtained. This *radiation* goes on in all elastic media, and in the Toricellian, and air-pump vacuum.

The affections of terrestrial radiant matter, are best demonstrated by employing two concave mirrors of planished tin, or plated copper, placed at the distance of 10 feet asunder; if the flame of a candle be placed in the focus of one mirror, a heating and luminous focus is obtained from the other; but if a plate of glass be now interposed between the two mirrors, the rays of heat are arrested, while those of light freely passing through the glass, are collected as usual in the opposite focus. This, therefore, proves a difference between the solar and terrestrial ray. The rays of the former pass through glass without heating it; the rays of the latter are stopped by the glass, and it becomes hot when opposed to them. See BURNING GLASS, and COLOURS.

RADISH, or *Raphanus*, a genus of plants, comprehending eight species, scattered over the globe, of which one is a native of our own country. The following are the chief: the *Sativus*, or Common garden radish, with lyrate leaves; siliques cylindrical, swelling into knobs, two-celled; a native of China. Three varieties: the Common radish, root long, red on the outside;—Turnip-rooted radish; root orbicular, white;—the black Spanish radish; root orbicular, black.

They are all annual plants, and raised from seeds by different sowings, from the end of October till April or May; they should have a light fine mould; and the more early sowings be made on borders under warm walls, or in similar places, and in frames and covered glasses.

The *Raphanistrum*, white-flowered, jointed charlock, or wild radish, has also lyrate leaves; the siliques are cylindrical, jointed, smooth, one-celled; found wild in our own corn-fields.

Radishes form an agreeable variety of salad for the robust, but are to be carefully avoided by the valetudinarian and dyspeptic; for these, the tender leaves of the radish are much better than the root itself.

Radish, the horse. See HORSE-RADISH.

Raft, the life. See LIFE-RAFT.

RAGSTONE, in mineralogy, a variety of trap or basalt of a black colour, with numerous white dots, and black lamellæ of basaltine, which give it a dark brownish-grey appearance. It is found in large masses, inclosing rounded pebbles of the same substance; it acquires an ochry crust by exposure to the air, and shines internally from a number of minute particles. It melts into a porous black mass, partly porcelain, partly enamel. It consists of silica, alumina, and oxide of iron. It is found in various parts of England, and is used for giving a keen edge to knives, chisels, and other edge tools.

Ragwort. See GROUNDSEL.

RAGWORT, the AFRICAN, or *Othonna*, a genus, comprising thirty-five species, natives mostly of the Cape; some with leaves cut or pinnate; others with leaves undivided, toothed, or very entire. The following are cultivated: the *bulbosa*, or Bulbous African ragwort; the *pectinata*, or Worm-leaved ragwort; the *abrotanifolia*, or Southernwood-leaved ragwort; the *coronopifolia*, or Buckthorn-leaved ragwort; the *cheirifolia*, or Stock-leaved ragwort; and the *arborescens*, or Tree-ragwort. They produce an agreeable variety among other potted plants of the green-house kind.

RAIL, or *Rallus*, a genus of birds, comprehending thirty-one species, scattered over the globe; three common to our own country; the following are the chief:

The *Crex*, or Land rail, has the feathers of the body reddish brown, belly whitish yellow; wings reddish rusty; bill and legs brown ash; inhabits sedgy places of Europe and Asia; nine and a half inches long; migrates; runs swiftly along the grass; flies slowly; feeds on insects and seeds; grows very fat; its note harsh, resembling the words *crek, crek*; lays in the dry grass, from twelve to sixteen eggs of a dirty white colour, with a few yellow spots; flesh excellent; found singly, but rarely, in different parts of England in July, August, and September, in the standing corn and clover, chiefly the latter. Two other varieties, found in the East and West Indies.

The *Aquaticus*, Brook ousel, or Water rail, has the feathers of the upper part of the body olive-brown, and black in the middle, the lower cinereous; belly and vent edged with rufous; wings grey, spotted with brown; tail feathers short, black; legs dusky red; inhabits the watery places in Europe and Asia; found also in our own country; twelve inches long; hides itself among the sedges; runs and swims with celerity; flies heavily; eggs yellow, with dusky brown spots.

The *Porzana*, or Spotted gallinule, is nine inches long; inhabits Europe and North America, and is found in our own country; frequents the sides of small streams,hiding among the bushes; flesh good.

RAIL-ROAD, a modern contrivance for facilitating the conveyance of heavy goods. It consists simply of smooth bars, or plates of iron, placed horizontally in two rows parallel to each other, at a convenient distance to receive the wheels of a carriage; the road on which the horse draws, lying between the two parallel rows, or ranges, of bars or plates. The wheels of the carriage are usually so constructed with a groove running round them, as to apply freely to the respective rails, without a possibility of their slipping off; sometimes this is effected by an elevation on the exterior side of the rails, the wheels being flat. In either case, the rails and wheels having tolerably smooth surfaces, and admit of motion at a much less expense of animal force than on the common roads of this country: one horse will draw more by means of a rail-road, than six could upon a common turnpike road.

Mr. C. Le Caan, has latterly improved the construction of these roads, by fastening the rails or tram-plates by means of a tenon and mortise, each having a corresponding bevel, so that the head of each succeeding plate confines the end of the next succeeding one. These plates rest upon stone blocks, or sleepers, which should not weigh less than 120lbs. each; they are placed three feet apart, and to which the plates are fixed by means of perpendicular, or beveled plugs, cast in the head of each plate.

Rail-roads are in very common use in many of the coal and mining districts of the kingdom. They have not, however, been yet converted to all the purposes for which they are adapted. They may, we presume, be applied to the common roads of the kingdom for travelling carriages and heavy waggons, with much advantage.

RAIN, water that descends from the atmosphere in the form of drops of a considerable size.

It is universally agreed, that rain is chiefly produced by the water previously elevated into the atmosphere by the heat of the sun, or otherwise from the terraqueous globe. It is doubtless, however, produced occasionally by the formation of water from the combination of oxygen and hydrogen gases, at the instant of explosion in thunder storms, and perhaps by electricity at other times when no explosion is heard. See Thunder.

Much has been said of the causes of rain, and many ingenious hypotheses have been advanced relative to its production, but the chief agent in the formation of rain, is unquestionably an alteration of temperature from heat to cold.

The quantity of rain which falls at various places, and at different times, is exceedingly variable. At Upminster, in the year 1700, the annual quantity was 19,03 inches; at Paris, the same year, 21,37 inches. In 1705, at Upminster, it was 16,93 inches; at Paris 14,82. In the year 1774, the annual quantity at London was 26,328 inches. In 1780, at the same place, it was 17,313 inches; in 1792, at the same place, it was 19,489; in 1808, it was 22,98 inches; the same year at Kendal, in Westmoreland, it was 43,34; at Dalton, in Lancashire, 39,99; at Chichester 36,62; at Bristol 32,08; in 1809, the quantity which fell at Dalton was 50,36; and at West Bridgford, in Nottinghamshire, the same year, only 17,55; at London, in the same year, it was 24,95. See Dew, Evaporation, and Water.

The great utility of rain, for watering the earth, is too well known to be insisted upon.

RAINBOW, a meteor in form of a party-coloured arch, or semicircle, exhibited in a rainy sky opposite to the sun, by the refraction and reflection of his rays in the drops of falling rain. There is also a secondary, or fainter bow, usually seen investing the former at some distance. There are also occasionally seen lunar rainbows, marine rainbows, &c.

In the primary rainbow, reckoning from the outside, the colours are ranged thus: red, orange, yellow, green, blue, indigo, violet; in the secondary bow, reckoning from the outward side, they are violet, indigo, blue, green, yellow, orange, red; the secondary rainbow is produced by two reflections and two refractions from the first. See Colours.

Rain-gauge. See Pluviameter.

RAISINS. Grapes prepared by suffering them to remain on the vine till perfectly ripe, and then drying them in the sun, or by the heat of an oven. Raisins are of various kinds. The smallest, *Corinth* raisin, is commonly called currants, and is chiefly imported from the island of Zante. The other kinds are called *Muscatel, Bloom, Sun, Belvidere, Lipari, Denia, Malaga, Alexia, Smyrna, &c.*

The common way of drying grapes for raisins is, to tie two or three bunches of them together while yet on the vine, and dip them into a hot lixivium of wood-ashes, with a little of the oil of olives in it. This disposes them to shrink and wrinkle; after this they are left on the vine three or four days, separated on sticks in a horizontal situation, and then dried in the sun at leisure after being cut from the tree. Sun raisins, and those brought in jars, are esteemed the best. Currants form a pleasant acidulous addition to laxative gruel, but neither these, nor any of the raisins, are of any medicinal importance. They are all somewhat laxative; but as they contain a considerable quantity of saccharine matter, they are often very injurious to the valetudinarian and dyspeptic, and should be, therefore, by them avoided. They appear, also, to be injurious to the teeth.

Raisin wine. See Wine.

RAM, the male of sheep. See Breeding, and Sheep.

Rampion. See Bell flower.

Ramsons. See Garlic.

RANCIDITY, the state of fat and oils, in which they become altered in their properties, and have an acrid or acid taste; and, in the case of fat, becoming also of a rusty yellow colour. Animal fats and oil are chiefly liable to rancidity.

Rancidity has been generally attributed to the exposure of fat or oil to atmospheric air; as it is well known that when these substances are kept cool and closely secluded from air, they remain for a long period without becoming rancid; heat, however, appears also to be a considerable agent in producing rancidity. From some experiments which have been made, fat, or a portion of it, has been converted into an acid, which has been termed the *sebacic* acid; and it has been supposed that rancidity arises from the generation of this acid in fat by the absorption of oxygen. Whatever be the cause of rancidity, certain it is, that rancid fat, butter, &c. are unwholesome aliments, and often produce very unpleasant sensations in the stomach. It appears, also, that when fat is exposed to a certain degree of heat, it acquires properties similar to those of rancidity, hence the mischiefs arising from all kinds of *baked* pastry, in which fat or butter is an ingredient. See FAT.

RANULA, a tumour under the tongue. It sometimes contains matter like synovia, sometimes a fatty matter, now and then stony concretions, but most commonly a fluid like saliva. It often acquires such a size as to prevent the sucking of infants, or mastification, or speech in adults. The best mode of treatment is to lay the tumour fully open, to evacuate its contents completely, and then to wash the cavity with any mild fluid, as milk and water: of course an experienced surgeon must be employed for this purpose.

Ranunculus. See CROW FOOT.

RANUNCULUS, the GLOBE, GLOBE FLOWER, *Gowland's locker*, or *Trollius*, a genus of plants, having numerous oblong, many-seeded capsules; it consists of two species; the *Europæus*, or European globe-flower, a native of Europe, and found wild in our own shades; the stalk is a foot high; flowers yellow, large, globose; it has a pleasant smell, and is ornamental in gardens. The *asiaticus*, or Asiatic globe-flower, is a native of Siberia.

RAPE, COLEWORT, COLESEED, NAVEW, or *Brassica napus*, is a valuable indigenous plant, reared in various parts of this country: it differs from the cabbage in not forming a close head. Being of a hardy nature, and affording a large proportion of green food for the support of sheep and other animals, and its seed yielding also a useful oil, it has been sometime introduced as an article of field culture.

The soils most adapted to this plant, are those of the deep and more fertile kinds; of the lands long in tillage, the friable and loamy kinds are best for it; but it grows also well in fenny, marshy, boggy, and other coarse waste lands, which have been long in grass: for such lands, as a first crop, it is often the best.,

The usual mode of preparing the soil for this crop, is the same as that described for turnip. See TURNIP.

The seed should be perfectly ripe, fresh, and of a fine black colour; the quantity per acre, is from a quarter to half a peck, according to the manner of sowing; where the crop is intended to be consumed as green food for animals, a larger portion of seed is necessary, than where the seed is the chief object of the cultivator.

When intended as a sheep feed, it may be put in any time in June or July, but if it be for seed, August is the proper season. The usual method of sowing, is to disperse it as regularly as possible over the surface of the ground by the hand, covering it by means of a bush, or other light harrow. In light open soils it is, however, sometimes ploughed in; in which case a larger proportion of seed is used. The drill method has also been adopted, and, it is said, is superior to any other. It has been recommended to sow the seeds in beds, and set out the plants afterwards in the manner of cabbage plants. The transplantation should be effected in September and October. These latter methods, are, however, more applicable to seed crops.

In the broad-cast method, little attention is bestowed in the after culture; one hand-hoeing is sometimes given. But when it is planted in rows, the hoeing may be performed in a more effectual manner by the horse-hoe.

When the produce is intended as green food, it is usually fit for this purpose in November; and when fed or cut down in autumn, the plants mostly advance, so as to produce a second crop in the spring.

When the crop is left to stand for seed, it requires to be well cleared by hoeing in the spring. The seeds ripen the end of June, or beginning of July. Care should be taken that it is not left till it is too ripe, or much seed will be lost. It is usually reaped with a sickle, and laid in thin *grips* or *reaps*, upon the place where it grows, till it is sufficiently dry for threshing. This is known by the straw becoming of a whitish colour, and the seed appearing perfectly black. It is usually threshed out in the field upon cloths laid upon the ground. In some parts of Yorkshire this business formerly constituted a sort of festival, but it is now on the decline; the method of binding the crop in small sheaves, and stacking it in the field, being much adopted; housing it in the barn is, however, to be preferred.

When this crop succeeds well, forty or fifty bushels of seeds are produced per acre. Rape crops are, notwithstanding, very precarious.

Rape is said to be superior to turnips in fattening sheep. When neat cattle are put upon this food in its green state, they must not eat too much of it at first, as they are very liable to be *hoven* by it.

Rape-seed oil is used for various purposes in the arts. It is found in commerce of different qualities. It is *refined* by boiling it in an open vessel, with a portion of diluted sulphuric acid.

The *cake* left after the expression of the oil, has been used in various parts of England, particularly Yorkshire and Norfolk, as a manure. Half a ton has been used per acre; but a much less quantity has been found very beneficial; one ton for three acres or more: it should be broken in small pieces, and ploughed in about six weeks before the seed is sown, that it may have time to dissolve in the ground. When ploughed in with wheat-seed it is peculiarly forcing to the crop. It is said that powdered rape cake strewed over the surface of the ground destroys the mole cricket, and that every insect of the same species may be destroyed by the same means.

RAPHANIA, a spasmodic disease, which is frequently epidemic in Suabia, and other parts of Germany. It is said to be produced by eating the seeds of radishes, which are often mixed with rye in that country; or more probably it is produced by *spurred rye*. The disease is attended with lassitude, shivering, pains of the head, anxiety, spasmodic startings of the fingers, feet, and muscles; with fever, delirium, stupor, suffocation, horrid convulsions of the limbs, with a sensation as if ants or other small insects were creeping on the parts. It continues from ten days to three months, and is accompanied with various appearances of the skin; sometimes a wasting of the body, with stupor, and stiffness of the joints.

For the method of treating this disease see our article POISONS, under the *third* division, *acrid narcotics*.

RAREFACTION, a term used very often, and too indiscriminately: it implies the act whereby a body is rendered rare; that is, brought to take up more room, or appear under a larger bulk, without accession of any new matter. It is opposed to condensation. Our more accurate writers restrain the term rarefaction to that expansion of a mass into a larger bulk which is effected by means of heat; it is applied most commonly to gaseous bodies, such as vapour, steam, atmospheric air, &c. Dilatation or expansion are much better terms to express the same state.

RASH, or *Exanthemata*, an order of diseases in Dr. CULLEN's arrangement, including Erysipelas, Plague, Small-pox, Chicken-pox, Measles, Miliary fever, Scarlet-fever, Nettle-rash, Pemphigus, and the Thrush. See the respective articles.

RASPBERRY, or *Rubus idæas*, a well-known shrub, a species of the bramble, consisting of numerous varieties. The red raspberry is indigenous to this country; and is found wild in the northern counties, in some woods on the south downs of Sussex, and, we believe, also in Wales.

The raspberry is much improved by cultivation. The large kinds of both red and yellow, or white raspberries, were, it is said, brought from Antwerp to this country. The yellow is most admired for the dessert, the red for ices, jams, &c. There is a kind cultivated which produces two crops annually, the last ripening in October; but this is rather to be considered as a curiosity than as deserving cultivation for the goodness of its fruit. An elegant wine may be made from raspberries. See WINE. The red raspberry is one of the most agreeable and wholesome of the summer fruits. But when made into jams it is by no means so salutary.

Raspberries are propagated by suckers, which may be planted any time after the fall of the leaf, and before the month of March. They should be placed in rows, each plant two feet asunder, and the rows five feet distant from one another. They thrive best in a sandy loam, which should be neither too moist nor too dry. The time for dressing them is October, when all the old wood which produced fruit the preceding summer, should be cut down to the ground, and the young shoots shortened to about two feet in length. The space between the rows should be dug up, and some rotten dung buried in them. In the summer they should be kept clean from weeds; and once in three or four years new beds should be made, and the old ones destroyed, as they seldom bear well if they continue after that time.

RAT, or *Mus*, a genus of quadrupeds comprehending forty-six species, scattered over the globe; six indigenous to our own country. These animals live in holes or chinks, climb and run swiftly; seek their food, which is chiefly vegetable, by night; and which they convey to the mouth by the fore-paws. Females mostly eight teats; breed many times a year, bringing numerous litters. Ears short, rounded; fore-feet generally four-toed, with a warty excrescence instead of a fifth: some of them migrate. They may be thus sub-divided: tail compressed at the end;—tail round, naked;—tail round, hairy;—cheeks pouched;—earless, eyes small, tail short, or none, subterraneous. The following are the chief:

The *Coypus*, or Beaver rat, has the hind feet palmate; inhabits the waters of Chili; easily tamed.

The *Zibethicus*, or Musk rat; anus with glands, secreting a musky, oily fluid; inhabits the slow streams of North America, on the banks of which it builds, but more simply than the beaver; swims and dives dexterously; a foot long.

The *Pilorides*, or Musk cavy, has the body white, tail longish, scaly; truncate; another variety tawny above; burrows; infests houses; smells of musk; size of a rabbit. The first variety inhabits India, the second the West Indies.

The *Rattus*, or Black rat, is of a deep iron grey colour, nearly black, belly cinereous; body seven inches, tail eight inches long; inhabits most parts of Europe: very destructive to corn, furniture, young poultry, rabbits, and pigeons; is destroyed in great numbers by the *decumanus*, or Norway rat. It was carried to South America in 1544, and is now become the pest of that continent. They also swarm in Otaheite, New Zealand, and New Holland.

The *Decumanus*, or Norway rat, is longer and stronger than the preceding; body nine inches, tail the same length; head, back, and sides a light brown, mixed with tawny and ash-colour; breast and belly dirty white; inhabits now most parts of Europe; but it was probably imported from the East Indies, where they are very destructive. Burrows like the water-rat; bold and fierce.

The *Americanus*, or American rat, is larger than the black, but less than the brown rat; upper jaw much longer than the lower; colour deep brown; on the belly inclining to ash; inhabits North America. The *Mus caraco* is nearly allied to this species. It burrows on the banks of rivers; it is found also in China, and on the banks of the lake Baikal.

The *Amphibius*, or Water-rat, has a thick blunt nose, small eyes, and yellow teeth; head and body covered with long hair, black, mixed with ferruginous; belly an iron grey; body seven inches long, tail five. Inhabits Europe, the north of Asia, and North America. Burrows in the banks of rivers, &c.; feeds on small fish, frogs, and roots; swims and dives well; is eaten by the pike: both this animal and the otter are eaten occasionally in France.

The *Musculus*, or Common mouse, needs no description, and is found every where, except in the Arctic regions; sometimes white.

The *Silvaticus*, or Field-mouse, has its head, back, and sides of a yellowish brown, breast of an ochre colour, belly white; body four inches and a half, tail four inches long; feeds on nuts, acorns, and worms; forms magazines of provisions for winter.

The *Messorius*, or Harvest-mouse, is ferruginous above, white beneath; two inches and a half long; tail two inches; very destructive to corn, &c.; found almost every where.

The *Striatus*, or Oriental mouse, is about half the size of the common mouse; of a grey colour; back and sides marked with twelve rows of pearl-coloured spots; inhabits India; another variety in Guinea, which smells of musk; its bite is, by some, said to be venemous.

The *Barbatus*, or Barbary mouse, is less than the common mouse, of a brown colour. The *mexicanus*, or Mexican mouse, is whitish, mixed with red. The *virginianus*, or Virginian mouse, is white. The *vagus*, or Wandering mouse, is pale ash, waved with black; inhabits the Tartarian desert. The *betulus*, or Birch mouse, runs up trees, and fastens on the boughs with its tail; inhabits the same as the preceding. The *agrarius*, or Rustic mouse, is ferruginous above, white beneath; less than the field-mouse; found in the temperate parts of Russia, and is very destructive; migrates sometimes in vast multitudes. The *minutus*, or Little mouse, is the least of the genus, weighing only half a drachm; it is found with the last. The *saxatilis*, or Rock-mouse, is brown mixed with grey. The *œconomicus*, or Economic mouse, is black and yellow intimately mixed; inhabits Siberia; lays by great store of provisions for winter. The *rutilus*, or Red-mouse, inhabits Siberia, and is found within the Arctic circle. The *alliarius*, or Garlic mouse, is found in Siberia, in magazines of bulbous roots, especially garlic; back cinereous, belly white. The *soricinus*, Shrew-like, or Soricine-mouse; body yellowish grey, belly white; found near Strasburg.

The *Lemmus*, Lemmus, or Leming, has the head and body black and tawny, disposed in irregular blotches; belly white, tinged with yellow; length five inches, tail one and a half; found in Norway, Sweden, Lapland, and Russia. They appear in numberless troops at very uncertain periods in Norway and Lapland, and are at once the post and wonder of the country; they march like the army of locusts so emphatically described by the prophet Joel, spreading universal desolation; they burrow under the snow as well as the earth; they are often eaten by the Laplanders. Whence they come is not exactly known; but in their migration they are never known to return.

The *Torquatus*, or Ringed rat, is ferruginous mixed with yellow; sometimes pale grey; neck encircled with a white collar; inhabits the northern parts of the Oby, and migrates like the lemmus. The *hudsonius*, or Hudson's Bay rat, is ash tinged with tawny, with a dusky stripe along its middle; belly pale ash; inhabits Labrador. The *lagurus*, or Hair-tailed rat; when young emits a musky smell; colour ash, mixed with dusky; inhabits the Yaik, Irtish, and Jenesey. The *socialis*, or Social mouse, has the body light grey, belly white; inhabits the Caspian desert. The *arvalis*, or Meadow-mouse, is ferruginous, mixed with black; belly ash; inhabits Europe, England, and Newfoundland. The *gregalis*, or Gregarious mouse; body black-ferruginous; belly whitish; inhabits Germany.

The *Cricetus* or Hamster rat, is nine inches long, tail three, colour reddish brown, with red cheeks; breast and belly black; sometimes found entirely black; males bigger than the females; inhabits Austria, Silesia, Poland, and the Ukraine; very destructive to grain, with which they fill their cheek pouches, which will hold the fourth of an English pint; they burrow in the ground, making vaults or apartments for themselves and their food: each young one having its different apartment; each sort of grain its different vault. They lie torpid from the first cold to the end of winter. The peasants frequently dig into their magazines, and besides the furs and skins of these animals, which are valuable, they usually find two bushels of good grain in one community. They are fierce, and make a noise like the barking of a dog.

The *Accedula*, or Yaik rat, is cinereous yellow, mixed with brown above, below hoary white; face white; inhabits the deserts about Yaik. The *arenarius*, or Sand-rat, burrows in the sandy plains near the Irtish. The *songarius*, or Songar rat, is grey, having a black line on its back; belly white; formed as the last. The *furunculas*, or Baraba rat, is cinereous yellow above; beneath white; inhabits the plains of Baraba, and about the lake Dalai. The *typhlus*, or Blind mole-rat, has neither eyes nor external ears; between seven and eight inches long; inhabits the southern parts of Russia and Poland. The *aspalax*, or Daurian rat, has no external ears; eyes very small; from six to nine inches long; inhabits the arctic mountains beyond the lake Baikal; called by the Russians the earth bear. The *maritimus*, or African rat, is thirteen inches long; colour cinereous brown; grows to the size of a rabbit, and is by some esteemed a good dish; digs large burrows, inhabits the sandy country near the Cape of Good Hope. The *capensis*, or Cape rat, is about seven inches long, and very destructive to the gardens about the Cape. The *talpinus*, or Talpine rat, is above dusky, belly and limbs whitish; inhabits the temperate parts of Russia and Siberia; in manners like the mole; they vary in colour, some are quite black.

Various methods have been practised for destroying the troublesome and destructive species of this tribe of animals. Dogs, cats, ferrets, and weazels are their natural enemies, and destroy great numbers of them; but killing, or taking of rats, furnishes employment to many persons, who are called *rat-catchers.*

Rats and mice are often caught in traps baited with burnt leather, or toasted cheese. A more efficacious method of destroying them is said to be by mixing a quart of oatmeal with six drops of oil of rhodium, one grain of musk, and two or three fruits of the *nux vomica* finely pulverized; and forming the whole into pellets, which must be placed near their holes. Another mode is to mix three parts of oatmeal and one of staves-acre, in powder, into a paste with honey, which should be divided into small pieces, and laid near their haunts. Another is to knead wheat-flour and sugar into a paste, scented with a few drops of oil of carraways, and after the animals have eaten of it for a short time, mix with such paste, some powdered arsenic; one ounce to eight ounces of the paste, will be sufficient. Another nostrum is, to mix eight ounces of calomel with fourteen ounces of dried and powdered nightshade, fifty-six pounds of oatmeal, six pounds of treacle, and a sufficient quantity of oil of rhodium to communicate a fragrant smell. Another recipe directs one or two tablespoonfuls of dry oatmeal to be uniformly but thinly spread upon a tile, or plate; the rats, if not interrupted, will regularly feed there; oil of aniseed is afterwards to be added, and at length after some days, let four ounces of dry oatmeal, perfumed with six drops of oil of aniseed be thoroughly incorporated with half an ounce of carbonate of barytes, in fine powder

In the application of all these, and similar preparations, care must be taken to exclude cats and dogs from having access to them, or the consequences may be fatal to these animals; and in order to tempt rats to devour these poisonous substances, all other food of which they are fond, should be carefully put out of their reach.

Of all such attempts to destroy these animals, we can only say, that they will *sometimes* succeed, if they can be tempted to eat the poisoned aliment, but they very soon discover the cheat, and avoid it. For the sake of humanity, it were to be wished, that other means than these could be found to destroy them at once. A ferret, with a dog to attend at their holes, is often a very effectual method. It should not be forgotten, that if a rat eats poison in a dwelling-house, he very often retreats under a floor, or to the ceiling, and dies, and the putrifying body is, sometimes, very offensive.

Of *rat-traps*, the common gin is well known. A cask of a moderate heighth has been proposed as a trap. It is to be covered for the first week with boards, strewed with oatmeal, and arranged in a sloping direction to the floor; after some time, a skin of parchment is to be substituted for the wooden top of the cask, and the former is cut for several inches with transverse incisions through the centre, so as to yield on the slightest pressure. A few gallons of water, to the depth of a few inches, are to be poured into the empty cask; in the middle of the water, a brick or stone is to be placed, so as to project one or two inches above the fluid, so that one rat may find refuge on it. The board, &c. must, of course, be furnished with proper bait. No sooner does a rat fall into the vessel, than it retreats to the brick or stone, and begins its lamentations; others soon follow, and share the same fate; and a conflict between the rats for the dry asylum of the brick, excites all the rats of the neighbourhood, which hasten to the fatal spot. It is said that hundreds may thus be caught.

RAT-TAILS, an absurd name given to a scurfy eruption on the back part of the legs of horses, extending from the fetlock upward, in distinct lines. After washing the part well with soap and water, apply mercurial ointment, or a mixture of lard and calomel.

RATAFIA, a fine spirituous liquor, prepared from the kernels, &c. of several kind of fruits, particularly of cherries and apricots.

Ratafia of cherries is made by bruising the cherries, and putting them into a vessel in which brandy has been long kept; then adding to them the kernels of the cherries, with strawberries, sugar, cinnamon, white pepper, nutmegs, cloves; and to twenty pounds of cherries, ten quarts of brandy. The vessel is left open ten or twelve days, and then stopped close for two months before it is tapped.

Ratafia of apricots is made either by boiling the apricots in white wine, adding to the liquor an equal quantity of brandy with sugar, cinnamon, and the kernels of apricots; infusing the whole for eight or ten days, then straining the liquor and putting it aside for use: or by infusing the apricots cut in pieces, in brandy, for a day or two, passing it through a straining bag, and then putting in the usual ingredients.

For the qualities of brandy, see BRANDY; but of the qualities of brandy, with these additions, we are not competent to speak: we cannot think them good.

RATTAN, ROTANG, or *Calamus*, a genus of plants, comprehending nine species, all natives of India. They afford us the greater number of the ornamental canes used for walking, under a variety of Indian names, according to the length of the internodes, or the spread or reflux of the prickles. From some of these is obtained *dragon's blood*. Those chiefly deserving notice are the following: The *rotang*, or Common rattan, having a stem with very thick, erect prickles, grooved; spadix erect. The *verus*, or Pliable cane, a hundred feet long, with equal, smooth, small, internodes, and horizontal prickles; spadix erect; calyx with three of the leaflets longer. The *scipionem*, or Walking cane, has the internodes long, subulate, glossy; stem thick, tapering, reddish, often spotted with black.

RATTLE-GRASS, or *Rhinanthus*, a genus of plants comprehending ten species, chiefly of the Cape, Levant, and Egypt; one, the *crista galli*, or Common yellow rattle, is a well-known weed, indigenous to our own meadows.

Rattle-snake. See SERPENT.

RATTLE-SNAKE-ROOT, or SENEKA-ROOT, is the produce of the *Polygala senega*, a species of milk-wort, a perennial plant native of North America, and flowering in June. The taste is at first sweetish, but after being chewed becomes pungent and hot; these qualities reside in the bark, the woody part being inert: it is inodorous.

Seneka root is a stimulating expectorant and diuretic; in large doses it is emetic and cathartic; it frequently occasions a copious spitting. An extract, combined with ammonia, has been found efficacious in lethargy; it is also useful in humoral asthma, and some kinds of dropsy; it has been also used in croup. The dose of the powdered root is from ten grains to one drachm, repeated every three or four hours.

A *Decoction of seneka root* is made thus: Take of seneka root one ounce; water two pints. Boil down to a pint and strain. The dose is from one fluidounce and a half, to three fluidounces, three or four times a day.

Raven. See CROW.

RAUWOLFIA, a genus of plants consisting of four species, trees or shrubs of South America. The following are cultivated: the *nitida*, or Shining rauwolfia, a small tree, glabrous all over, full of a white glutinous milk; flowers white; berries fleshy, milky. The *canescens* or Hoary rauwolfia, is also milky; flowers terminal, reddish, scentless. They may both be increased by seeds or berries planted in pots of light mould, either in autumn or spring, and plunged in a moderate hot-bed. They may also be increased by layers or cuttings.

Ray of light. See COLOUR, RADIANT MATTER, and RAINBOW.

RAY, or *Raia*, a genus of fishes, having a broad, thin, flat body, comprehending nineteen species, which may be thus subdivided: teeth sharp, comprising the skates and electric ray, or torpedo;—teeth obtuse, comprising the sting-ray, and thorn-backs;—uncertain, comprising five species, which inhabit the Red Sea and around the Cape of Good Hope, but which have not yet been sufficiently examined. They are all inhabitants of the sea only; they keep at the bottom, and in winter, cover themselves with mud, or sand; they feed on testaceous animals, fishes, and other substances; grow to a large size, sometimes exceeding two hundred pounds. The females are the larger, and produce their young alive, which, like the young of the shark, are inclosed in a quadrangular, black, horny shell. Flesh generally eatable; liver large, producing a great quantity of oil. The following are the chief:

The *Batis*, or Skate; varied; middle of the back smooth; tail with a single row of spines; inhabits the European ocean, and is the largest of the genus, body above cinereous, beneath white. Of all the larger fishes, the skate is the most numerous. The fishes of this tribe, probably, attain a much larger size than that of any individual which has been yet examined. It is only the smallest kind, that approach the shores; the larger continue for ever prowling at the bottom of the ocean, where they continue, perhaps, to grow for a century. Hence the utmost bulk of this tribe of rays, cannot be ascertained. Some zoologists have supposed them to be the largest inhabitants of the seas. They generate in March and April; they are very prolific; three hundred eggs have been found in the body of one female. In October, after they have disencumbered themselves of their young, they are exceedingly poor; they are at the highest perfection in May.

The English and Dutch carry on the fishing to a considerable extent; the season at which they begin, is early in the winter. Skates are caught with hooks and lines: the Dogger bank is a noted rendezvous for these fish, as well as turbot, cod, and ling.

The *Oryrinchus*, or Sharp-nosed skate; varied; middle of the back with ten spinous tubercles; seven feet long; frequent on the British coasts. In diving for pearls, the negroes are sometimes destroyed by this fish.

The *Torpedo*, Torpedo, or electric ray, has the body entirely smooth, flat; inhabits our own coasts, and the Mediterranean seas; grows to a large size; sometimes weighs eighty pounds; usually about twenty; colour dirty clay; it can live only twenty-four hours out of the sea. It inhabits those places where the bottom is sandy, and buries itself superficially, by flinging the sand over its back. In this situation it astonishes the unwary passenger by the exertion of a faculty, perhaps, of the most extraordinary nature. The instant the fish is touched, it benumbs the arm, and sometimes the whole body of the person who touches it; the same effect is produced, even when it is touched with a stick, or trodden upon by a person who has his shoes on. The shock given by this animal most nearly resembles that of an electrical machine; it is sudden, tingling, and painful. In this animal, as well as in the *gymnotus*, examination and dissection have lately proved, that they possess such arrangements of the electrical kind, as certain forms of the galvanic apparatus much resemble: they consist of many alternations of different substances. The electrical organs of these fishes are more abundantly supplied with nerves, than any other part of the animal; and the too frequent use of them is succeeded by debility and death. Notwithstanding this property of the torpedo, it appears to impart no noxious quality to it as food: the French very commonly dress and eat it. The food of this species is surmullets and plaise; it is taken at Torbay, off Pembroke, and at Waterford, in Ireland; it is caught like other flat-fish.

The *Pastinaca*, Sting-ray, or fireflaire, has a smooth body, tail with a long sharp spine, another in the back: two other varieties. The wounds inflicted by the spines of these animals are sometimes troublesome and even dangerous; but these spines do not, as far as is known, contain any poison, as has been erroneously supposed. The spine is, however, a formidable weapon: the arrows of the South American tribes are pointed with it. Its usual size is about eight or ten pounds. The fishermen usually cut off the tail, and sell it deprived of the instrument of mischief.

The *Clavata*, Thornback, maid, or old maid, is distinguished from all the other species of the ray by its spines, which consist of three rows upon the back, and five upon the tail, all pointing towards its end; back cinereous, belly white. It is very common in the London market; flesh indifferent.

RAZOR-SHEATH, or *Solen*, a genus of bivalve shell-fish, consisting of twenty-three species, scattered through the seas of the globe; seven common to our own coast. They lurk in the sand, near low water mark, in a perpendicular direction, and on the approach of danger, dart into the sand, to the depth of one or two feet. As an esculent, the *solen* was known to the ancients as a delicacy; it is still frequently used as food.

READING, the art of delivering written language, with propriety, force, and elegance.

The art of reading is, unquestionably, one of considerable importance, and should be acquired by every person who has not insuperable natural impediments to the exercise of it. A great deal has been written upon this useful branch of knowledge; but we cannot admit that "reason and experience demonstrate, that delivery in reading ought to be less animated than in interested speaking:" on the contrary, we do not hesitate to affirm, that that reading is the best which approaches the nearest to oral language; that if at any time, it be not possible to read the production of some writers, like oral language, the fault is in the writers; and that all writing ought to approach as near as possible in its style, to oral language, in order that it may possess the greatest and most powerful effect: for we take it for granted, that the living voice is the most powerful means of enforcing every kind of sentiment and truth.

Nature in this, as in all imitative arts, one of which reading is, must be our guide; and is superior to all rules which can be laid down.

RE-AGENTS, in chemistry, such substances by which we are enabled to draw conclusions respecting the nature and properties of the bodies to be examined, by means of those alterations which they suffer themselves, or produce in others. See TESTS.

REALGAR, a combination of arsenic with sulphur, of a red colour, more or less lively and transparent, often variegated with yellow streaks, and sometimes crystallized in brilliant needles. It is found in Sicily, Naples, Hungary, Bohemia, China, Japan, &c.; specific gravity 3,388.

An artificial realgar has been lately applied to the purpose of dyeing a yellow colour thus: Take of sulphur one part; of the white oxide of arsenic two parts; of pearl-ashes five parts. Let these be fused in a crucible, at a heat a little below redness; a yellow mass results which is to be dissolved in water, and filtered. The filtered solution is to be treated with a weak sulphuric acid, which produces a fine yellow precipitate. When washed it dissolves with great facility in ammonia, forming a solution, at first yellow, but becoming colourless by the addition of ammonia. The wool, silk, cotton, or linen to be dyed, is to be dipped in this solution, more or less, according to the colour required, care being taken that no metallic vessels are used. On taking them out they are at first colourless, but as the ammonia evaporates they become yellow. They must be exposed to a free access of air on all sides, and then washed and dried. Wool must be left in the liquor until perfectly impregnated with it, and afterwards slightly wrung. Silk, cotton, and flax merely require immersion, and should have the excess of fluid wrung out of them. This dye gives all shades of yellow, and is very permanent in air; but alkali and soap injure it; perhaps it is most advantageous for taffeta, velvet, &c.

For the treatment of persons who have taken realgar by mistake, or as a poison, see ARSENIC and POISONS.

Reaping, and *Reaping-hook*. See HUSBANDRY.

REASON, that process, or processes of the mind, by which different ideas or things are compared, their fitness or unfitness perceived, and conclusions drawn from such comparisons and perceptions.

We are aware that this is not the usual definition of reason. Reason has been defined—A faculty or power of the soul, whereby it distinguishes good from evil, and truth from falsehood. The observations which we have made relative to CONSCIENCE will apply with equal force here. If reason in every individual were the same, *an unerring guide*, and always enabled us to distinguish good from evil, and truth from falsehood, no such discrepancies and discordancies as are found amongst mankind could exist. But do we not find that what appears reasonable to one person, appears the most unreasonable and preposterous to another? We reason according as our faculties or capacities have been formed or called forth, and hence the all-powerful influence of education and circumstances in our reasonings. What humility, what charity ought not this consideration to teach us! See CONSCIENCE, DIFFERENCE OF OPINION, and LOGIC.

Reaumur's Thermometer. See THERMOMETER.

RECEIPT, in commerce, is an acquittance or discharge in writing, implying that the party signing the instrument has received a certain sum for the whole of a debt, a part, or on account.

No receipt is valid, unless written on paper, stamped according to law; except for sums under 40s.; and every receipt in full of all demands, must be written on paper on which is a stamp of the value of ten shillings.

Receipt is also a term applied to directions for the preparation of medicine and other things; see the next article.

RECIPE, pronounced *re-ci-pe*, and more commonly but erroneously called receipt, is a term applied to a physician's prescription, and also to other directions for the preparation of medicines; it is also very often applied more extensively to the directions given for the preparation of any thing in the arts, &c.

It is supposed to have originated from the commencement of every physician's prescription being thus: ℞; which is now understood to imply *recipe*, or take. This mark is, however, supposed to be a relict of the astrological symbol of Jupiter ♃.

RECTIFICATION, in chemistry, a second distillation, in which substances are purified by their more volatile parts being raised by heat carefully managed. See SPIRIT OF WINE.

Rectified Spirit of Wine. See SPIRIT OF WINE.

RECTUM, or Straight-gut, in anatomy, the last portion of the large intestines. See ABDOMEN.

RED, one of the simple, or primary colours of natural bodies, or rather of the rays of light. See COLOUR, COLOUR-MAKING, DYEING, and RADIANT MATTER.

Red-breast. See WARBLER.

Red Cedar. See JUNIPER.

Red Chalk. See REDDLE.

Red-eye. See CARP.

Red-gum. See INFANCY.

Red-Ink. See INK.

Red-Lead. See LEAD.

Red-pole. See FINCH.

Red Precipitate. See QUICKSILVER.

Red Sanders. See SANDERS.

Red-sand-stone. See SAND-STONE.

Red-shank. See CURLEW.

Red-start. See WARBLER.

RED-WATER, a disease to which horned cattle are liable. The illness of the animal is first observed by its separating itself from the rest of the herd, and having little or no appetite; the hair stands on end, the eyes are dull, and, when the disease is far advanced, appear sunk in the head; the urine is of a red colour, and voided after a considerable effort. It often attacks cows, and is generally considered dangerous; it sometimes proves fatal. It is accompanied with fever. The cure consists in giving at first a pound of Glauber's salts in two quarts of gruel, in order to clear the stomach and bowels; when this has operated give the following drench: Take of tincture of opium half a fluidounce; acetate of lead one drachm; catechu in powder, half an ounce; gruel one quart. Should this fail, the proportion of tincture of opium, and acetate of lead should be increased; and an addition of alum may sometimes be advantageously made.

This disease must be distinguished from inflammation of the kidneys, in which there is a constant desire to stale, while only a very small quantity of red-coloured urine is voided; there is also, in such complaint, a tenderness of the loins, stiffness of the motion of the hind parts, and fever. Bleeding is here proper, and covering the loins with a sheep-skin; a dose of castor-oil, and an anodyne clyster should also be given.

The red-water of *sheep* is supposed to be a different disorder from that above described. It is most probably occasioned by too much watery or succulent food, such as turnips, rape, &c. The use of common salt has been recommended, and dry food, at least, for the night feeding.

Red-wing. See THRUSH.

REDDLE, RADDLE, or RUDDLE, in mineralogy, a species of the iron genus, consisting of clay and oxide of iron; its name bespeaks its colour. There are several varieties of this substance; the most compact is *red-chalk*; this is chiefly used for drawing, and is found in Silesia. A more common kind is found in great abundance in the Mendip hills, in Somersetshire: it is called by the colour-makers Spanish-brown: it is used for various purposes in the arts: in powder, formed into square lumps, and ground in oil for paint.

Reduction, in metallurgy. See FLUX, ORE, IRON, LEAD, &c.

REED, or *Arundo*, a genus of plants comprehending eleven species, most of which are natives of our own country, and may be found in ditches, moist woods, and stagnant waters. The *arenaria* alone demands a dry soil, and chiefly flourishes on our sandy shores. The Turks make their pens from the *orientalis*.

Reeds are used for various purposes, chiefly for coarse thatching; and they form an excellent material for ceiling, instead of laths.

Reed, the Indian. See INDIAN REED.

Reed-mace. See CAT'S TAIL.

Reeve. See LAPWING.

REFINING, in metallurgy, a branch of the general process of assaying metals. See GOLD, SILVER, IRON, &c.

REFLECTION, that process of the mind which is occupied in contemplating ideas previously received.

REFLECTION, in optics, that process which, when the rays of light arrive at the surface of bodies, a part of them, and sometimes nearly the whole, is thrown back, or reflected, and the more obliquely the light falls upon the surface, the greater, in general, is the reflected portion. In these cases the angle of reflection is always equal to the angle of incidence. See COLOUR and RADIANT MATTER.

REFRACTION, in optics, an inflection or deviation of the rays of light, from their rectilinear course, on passing obliquely out of one medium into another of a different density. See COLOUR and TELESCOPE.

REFRIGERANTS, those medicines which allay the heat of the body. Cold air, cold water, purging neutral salts, &c., are refrigerants.

REGIMEN, in medicine, the regulation of diet; and, in a more general sense, of all the non-naturals, with a view to preserve or restore health. See AIR, ALIMENT, BREAKFAST, DIET, DINNER, DIGESTION, DYSPEPSIA, FOOD, &c. &c.

REGISTER, a public book, in which is entered and recorded memoirs, acts, and minutes, to be had recourse to occasionally for knowing and proving matters of fact. Of these, *parish registers* are the most common, and most important; in these every baptism, marriage, and burial, in the church or church-yard, is recorded by the officiating clergyman.

Among dissenters who admit of infant baptism, each minister is supposed to keep a register of the several children baptized by him; but as these are frequently lost, it is now almost generally the custom, among dissenters of all denominations, to register the births of their children at the library in Red-cross street, Cripplegate, London; for which the charge is sixpence. This register is admitted as evidence in our courts of law.

REGISTER-GRATE, a grate in which the exit of the smoke is regulated by a moveable valve. See CHIMNEY and FIRE-PLACE.

REGULUS, a term in metallurgy, formerly applied to the pure metal. Its use is scarcely known in modern chemistry.

REMITTENT FEVER, a fever consisting of repeated paroxysms, without any entire intermission between them. Remittent fevers are much more dangerous than the true intermittents, being generally attended with much greater debility, and tendency to putrescency, than agues. Remittent fevers are frequent in this country; but they are most frequent, and often fatal, to Europeans in hot climates. See TYPHUS.

Remora. See SUCKING-FISH.

REMORSE, that pain, or suffering of the mind, which we feel upon a conviction that we have done wrong. Remorse is one of the most terrible of the human passions: the only possible advantage arising from remorse is, that it often induces us to adopt another line of conduct, more consistent with our own, as well as our fellow creatures' well-being; and where it conduces to this end, it may be encouraged; but where remorse paralyses the mind, and leads to the blankness or the insanity of despair, it should be resisted; for such are not the means to become either virtuous or wise. In morals, we should never forget, that, by suitable means, there is no disease so desperate which might not, possibly, admit of a cure. In this state of mind, therefore, benevolence, kindness, and hope, are animating stimulants, and should be carefully and judiciously applied. *Repentance* is a variety of remorse; its utility is to be judged of in the same way. See Conscience.

RENNET, or Runnet, the juice, or gastric fluid, found in the stomach of sucking quadrupeds, which have received no other nourishment than their mother's milk. In ruminating animals, which have several stomachs, it is generally found in the left and lowest, which is, in reality, the only proper stomach. If this juice be dried in the sun, and kept close, it will keep for years. The stomach itself is, however, more commonly preserved for the purpose of obtaining the rennet, for the coagulation of milk. See Cheese and Vell.

REPELLENTS, in medicine, remedies which drive back a morbid humour into the mass of blood. Repellents should be always applied to the surface of the body with extreme caution; their application is often attended with great danger.

Repentance. See Remorse.

REPTILES, in natural history, those animals which creep; it is, however, in a more restricted sense, applied to the tortoise, lizard, siren, dragon, and frog tribes.

RESIN, a generic term for a great variety of substances, of very different qualities and forms. Resins exude from many trees, either from natural fissures or artificial wounds. Most of the resins are soluble in alcohol; that matter which is obtained from vegetables by the intervention of alcohol, and when inspissated, is hard, brittle, and shining, is also called resin; such is that obtained from Peruvian bark, jalap root, &c. Common resin, or rosin, as it is very often called, is obtained by distilling the turpentine obtained from different species of the fir: oil of turpentine passes over, and the resin remains behind. It may be taken as a perfect example of resin, and is possessed of the following properties: it is solid, brittle, a little heavier than water, and acquires negative electricity when rubbed. It has a slight terebinthine smell, is insoluble in water, readily soluble in alcohol, which takes up about one-third of its weight, and becomes milky upon the addition of water. Resin is soluble in the caustic alcalies; the solution is saponaceous. The nitric, muriatic, and acetic acids, dissolve it without much change; this resin is also exceedingly inflammable; its combustion produces lamp-black.

A few of the resins derive odour from containing essential oil; some afford benzoic acid when heated: these have been termed balsams. See Balsam. *Copal*, and a few others, are very difficultly soluble in alcohol, and contain a substance somewhat analogous to Indian rubber. *Lac* and *Guaiacum* are resins.

Gum-resins are natural combinations of gum and resin; they are consequently only partially soluble in water and in alcohol; they readily dissolve in the alkaline solutions when assisted by heat; and the acids act upon them nearly as upon resins. *Ammoniacum*, *Assafœtida*, *gamboge*, *olibanum*, *&c.* are gum-resins.

Amber, also, in some of its properties resembles resins.

The uses of yellow resin are too well known to need description. For an account of the other resins, and the gum resins, see the respective articles in the order of the alphabet.

RESPIRATION, that action of the lungs and diaphragm, consisting of the processes of inspiration and expiration by which air is received into, and expelled from, the thorax or chest. Obvious circumstances render it difficult to ascertain the quantity of air taken into the lungs at each natural inspiration, as well as the number of respirations made in a given time: the former, Mr. Brande thinks, is about 15 or 16 cubic inches, and the latter about 20 in a minute. See Anatomy, Blood, and Breathing.

REST-HARROW, or *Ononis*, a genus of plants, comprising sixty-eight species, of which some have sessile flowers; others flowers on awned peduncles; and others are of uncertain division. They are mostly Cape plants, some indigenous to the South of Europe, or to Asia: two, the *spinosa*, or Cammock, found in our fields and meadows, and another species on our sea coasts. The following are the species chiefly cultivated: the *natrix*, or Yellow-flowered, shrubby rest-harrow; a very strong-smelling plant, a native of the South of France; the *tridentator*, or Three-tooth-leaved rest-harrow, with erect shrubby stalks, and purple flowers, appearing in June; a native of Spain and Portugal: the *fruticosa*, or Shrubby rest-harrow, is a beautiful low shrub, with purple flowers, appearing in May and June; a native of the South of France; the *rotundifolia*, or Round-leaved rest-harrow, has also purple flowers; it is a native of Switzerland. These may all be increased by seeds, cuttings, and slips. The cammock is only known as a spinous, troublesome weed.

RESUSCITATION, the restoring of persons, apparently dead, to life. See CHARCOAL, DROWNING, &c.

RETE MUCOSUM, a mucous substance, deposited in a net-like form, between the scarf and true skin, which covers the sensible cutaneous papillæ, connects the scarf-skin to the true skin, and gives the colour to the body: in Europeans it is of a white colour, in negroes, &c. it is black.

RETINA, the third, or innermost membrane of the eye. It is the true organ of vision, and is formed by an expansion of the pulp of the optic nerve. See SIGHT.

RETORT, a chemical vessel, employed for many distillations, and most frequently for those which require a degree of heat superior to that of boiling water. Retorts differ in form and materials: when pierced with a little hole in the roof, they are called tubulated retorts. They are made of glass, stoneware, and iron; and for fluoric acid of lead.

REVENGE, a vindictive desire of avenging real or imaginary wrong. It is one of the most injurious passions which torments and degrades the human mind. Whatever is done in the spirit of revenge, is done from a bad motive, and should be discountenanced. He who renders evil for evil, acts from a bad motive: the motive is revenge. He who inflicts pain in retaliation, under the impression that certain conduct ought to suffer certain pain, as a measure of justice, acts from a principle of revenge. In no other way can the infliction of pain be at any time justified, than by its *necessary utility*: that conduct which is neither necessary nor useful, must be bad. Revenge is neither necessary nor useful; it contemplates no utility; on the contrary it debases and demoralizes the mind; it should, therefore, never prompt the conduct of any rational being. See PUNISHMENT.

REVERBERATORY, in chemistry, a furnace, so constructed that the heat or flame may reverberate, or turn back, in order to act upon the matter placed at the bottom. This kind of furnace is chiefly used in the reduction and assaying of metals, where an intense heat is required.

REVIEW, in literature, a periodical publication, which gives analyses and criticisms of the principal new works as they issue from the press. We are sorry to observe that some of our modern reviews have widely departed from the definition of a review here laid down. It frequently happens, in these modern periodical novelties, that the title of a work being quoted, it merely serves as a text from which the reviewer often preaches a long and tedious sermon of his own. Surely this is not exactly the business of a reviewer. See CRITICISM, and PERIODICAL PUBLICATIONS.

Reward. See DUTY, and MERIT.

Rhapontic. See RHUBARB.

RHATANY, or *Rhatania*, a root, long known to the manufacturers of port wine; it is obtained from Peru, and is conjectured to be the root of the *cinchona cordifolia*, or Pale Peruvian bark-tree. In its external appearance it resembles madder root, but is larger; it has a bitter astringent taste; its infusion or decoction turns black with sulphate of iron, and precipitates tannin. The virtues appear to reside in the cortical part of the root, which is thick and resinous. It has been suspected that the foreign extract of Peruvian bark, sold in the shops, is obtained from this root.

Rhatany root is powerfully tonic, and has been given in various diseases of debility with good effect. Its dose is similar to Peruvian bark.

RHETORIC, the art of speaking copiously on any subject with beauty and force. See ELOQUENCE.

RHEUM, the discharge from the nostrils or lungs, arising from cold.

RHEUMATISM, or *Rheumatismus*, a disease distinguished by fever, pain in the joints and muscles, increased by the action of the muscles, and heat of the part. It is distinguished into *acute* and *chronic*. The acute is preceded by shivering, heat, thirst, and frequent pulse; after which the pain commences and soon fixes on the joints. The chronic is distinguished by pain in the joints and muscles, without fever; and is called by different names, according to the part affected. When the loins, it is called *lumbago;* when the thighs, *sciatica*, &c. The acute rheumatism mostly terminates in some of these.

It is sometimes difficult to distinguish this complaint from the gout; but in rheumatism there is less affection of the stomach; it affects chiefly the larger joints; it occurs at an earlier period of life than gout; and is not observed to be hereditary. It can, in general, be traced to some obvious exciting cause, particularly cold. The disease is chiefly caused by sudden changes of temperature; by suppressed perspiration, by moist cold air, especially at night; damp clothes; partial heat or cold; suppressed chronic eruptions; inhalation of metallic vapours; violent passions; and is often the sequel to the recovery from acute disorders. Agricultural labourers, who are exposed to great vicissitudes of heat and cold, are peculiarly liable to chronic rheumatism, particularly as they advance in life. It is frequent in cold, and more uncommon in warm climates; its most common attacks are in the autumn and spring; but it occurs at all seasons of the year.

The *acute* rheumatism arises, for the most part, from the application of cold to the body when unusually warm; or when cold is applied to one part of the body, whilst the other parts are kept warm; or when moist or wet clothes are applied to any part of the body. It, in most instances, terminates between the seventh and fourteenth day, by perspiration or urinary secretion, in which is a copious sediment resembling brick-dust. The *chronic* sometimes produces a looseness, but generally requires a critical perspiration to remove it completely. When it removes from the external to any of the internal parts, and lodges there, it is always dangerous; and in such cases a medical practitioner ought to be consulted.

In the acute rheumatism, next to blood-letting, which is the chief remedy, and must be repeated in proportion to the frequency, fulness, and hardness of the pulse, and violence of the pain, nothing is of so much service as sudorifics; and of all such medicines, the compound powder of ipecacuanha is the most convenient and effectual. See IPECACUANHA. Copious sweating, excited by this medicine, and supported for ten or twelve hours by tepid diluents, will, in most instances, produce a complete remission of the pain; and by this practice, when combined with blood-letting, as mentioned above, and a spare regimen, the disease may generally be removed.

Attention to the bowels in this complaint must not be omitted; they should be kept gently relaxed with small doses of Epsom salt, or other similar purgative. If the extremities should swell and become painful, leeches may be applied to the tumefied parts. Warm cataplasms applied to the part may sometimes also be of service; but in the acute rheumatism, external applications are, in general, of little use. After the inflammatory stage of the disease is gone off, the Peruvian bark, and other tonics, may be given with advantage.

When the fever attending the acute rheumatism has ceased, the swelling and redness of the joints gone, but pains still continue to affect certain parts which remain stiff, feel uneasy upon motion, changes of weather, or in the night time only, the disease is then called **Chronic Rheumatism**, as it often continues for a very long time. It sometimes degenerates into paralysis.

The cure in this state of the complaint, consists in restoring the vigour and activity of the parts. Many remedieshave been proposed for this purpose, both external and internal. The external consist in supporting the heat to the part, by keeping it constantly covered with flannel; in increasing the heat of the part by external heat, either in a humid or dry form; in the diligent use of the flesh brush, or other friction; in electricity; the warm bath; the application of stimulating oils, blisters, cataplasms of mustard, horse radish, &c. *Guaiacum* has also been of service. But a remedy for this complaint has lately been given with great success by Dr. Williams, of Ipswich, and which we feel great pleasure in recommending as it is offered to the public in the free spirit of scientific liberality It is the

Wine of the seeds of meadow saffron, which Dr. Williams directs to be prepared thus: take of the dried seeds of meadow saffron, two ounces; of sherry wine, one pint. Digest for eight or ten days, frequently shaking; then filter through paper, and let it be kept in a vessel well stopped.

The dose must be proportioned to the age and strength of the patient. With adults, Dr. Williams usually commenced by giving one fluidrachm in a table-spoonful, or more, of some aromatic water, such as cinnamon, once or twice a day, according to the violence or continuance of the disease, gradually increasing the dose to three fluidrachms as circumstances may require; beyond which, he has never found occasion to extend it. It should be taken, generally, two or three hours after breakfast, and repeated at bed-time; but if the disease be mild, and of short duration, one dose a day may be sufficient; that should be taken on going to bed. Such is the uniform mildness with which this medicine acts, that it requires no particular care in the patient, nor anxiety on the part of the medical attendant; its only sensible operation is on the bowels, and a sensation of comfortable support to the patient, so that an omission of one or two doses, occasions a sensation of the absence of some invigorating power. During the exhibition of this remedy, diet of a flatulent nature should be avoided; especially fish, puddings, &c.; a restriction in the use of beer, tea, coffee, and chocolate, will also be advantageous, and contribute to complete recovery. This medicine has completely cured some of the most distressing and painful cases of chronic rheumatism which can be conceived. See the London **Medical Repository**, for Aug. 1820.

After this statement, it can scarcely be necessary for us to add another word. We wish merely to observe, that as chronic rheumatism is clearly a disease of debility, in addition to the medicines which are taken for its cure, what is said under aliment, appetite, and dyspepsia, should be carefully attended to.

The *Lumbago*, *Sciatica*, &c. are species of this disease, and must be treated as above described.

Rheumatism in Horses. See **Chill.**

RHEXIA, a genus of plants, consisting of seven species, natives of America, or the West Indies. The two following are cultivated: the *Virginiana*, or Virginian rhexia, having a shrubby stem, and solitary red flowers, spreading open in the form of a cross: a native of Virginia. The *Mariana*, or Maryland rhexia, with reddish flowers; a native of Maryland. They are both propagated by seeds from their native climates, flowering the second year, and with care continuing for three or four years.

RHINOCEROS, a genus of quadrupeds, consisting of two species, as follow:

The *Unicornis*, or One-horned rhinoceros, is one of the largest of animals;

the body equals the bulk of the elephant; but he is not so sagacious; the single, black, smooth horn, sometimes three feet and a half long, which is situated near the extremity of the nose, constitutes his specific character. The upper lip is disproportionately large, hanging over the lower, and terminating in a point; it is furnished with muscles, which enables the animal to move it with great dexterity in collecting his food, and introducing it into the mouth; the nostrils are in a transverse direction; the ears are large, erect, and pointed. The skin is naked, rough, and extremely thick; about the neck it is gathered into enormous folds; tail slender, flat at the end, and covered with stiff black hairs. The breadth of the feet does not exceed the circumference of the legs. A native of Bengal, Siam, Cochin China, Quangsi in China, and the isles of Java and Sumatra. He is a solitary stupid animal, haunting shady forests adjoining rivers, and miry and marshy places. Unless provoked by injuries, he is commonly mild and inoffensive. His rage is desperate and dangerous. He urines and copulates backwards. The female produces only one young at a birth. The young at a month old is not larger than a large dog; it increases in bulk very slowly; at two years old he scarcely attains half his full height. The eyes are small, and the sight dull; but his senses of hearing and smelling are in high perfection. Thorns and prickly shrubs are his chief food; tongue smooth and soft; age sixty or seventy years. The skin, though extremely hard and resisting, is yet liable to be penetrated by many missile weapons. In voice and manners he resembles a hog; flesh coarse, and not unlike pork, but of a stronger taste. The teeth, while young, straggling, solitary; when old, completely shed.

The *Bicornis*, or Two-horned Rhinoceros, has two horns, but in size, form, manners, and almost all other characteristics, is nearly allied to the former species. The chief distinction is in the additional horn: the second standing straight behind the first. The anterior horn is always larger than the posterior, both are of a conical shape. A native of various parts of Africa. He not only consumes the bark of trees, but frequently their wood, dividing it into laths with his horn, and devouring it with as much ease and avidity as an ox would eat a bunch of celery.

The rhinoceros, though next in size, yet in docility and ingenuity, is greatly inferior to the elephant, and has never been tamed so as to assist the labours of mankind.

In Africa the flesh of this animal is eaten as food by the natives, and the hairs of the tail are used as thongs; the skin is also cut into thongs, makes whips, and the horns are made into cups, &c.

Rhinoceros bird. See HORN-BILL.

Rhodium, the wood. See ROSE WOOD.

RHODIUM, a metal, found in the ore of platinum. It is of a white metallic lustre, and very difficult of fusion; its specific gravity is 10,6. It forms malleable alloys with the malleable metals. It may be obtained from the ore of platinum thus: digest crude platinum in a small quantity of nitro-muriatic acid, filter the saturated solution, and pour it into a solution of sal ammoniac, by which the greater proportion of the platinum will be precipitated. Decant the clear liquor, and immerse a plate of zinc, which becomes coated with a black powder. Separate this, and digest it in dilute nitric acid, by which a little copper and lead are taken up. Then wash and digest in dilute nitro-muriatic acid, to which add some common salt; evaporate to dryness, and wash the dry mass repeatedly with alcohol. A deep red substance remains, which, when dissolved in water, furnishes a black precipitate upon the immersion of a plate of zinc. This, strongly heated with borax, assumes a metallic white lustre, and is rhodium. See PLATINUM.

RHODODENDRON, in botany, a genus, consisting of ten species, chiefly natives of the Alps or Siberia; one or two indigenous to America. The following are the chief: the *ferrugineum*, or Rusty-leaved rhododendron, has a shrubby stalk, three feet high, bark purple; leaves glabrous, beneath leprous, ferruginous; flowers pale rose colour; blossoms from May to July; a native of Switzerland. The *hirsutum*, or Hairy rhododendron, with elliptic leaves. The *chamæcistus*, Dwarf rhododendron, or rose-bay, a small shrub, with purplish flowers, a native of Austria. The *ponticum*, or Purple rhododendron, grows to about five feet high; has oblong glabrous leaves; a native of the Levant. The *maximum*, or Broad-leaved rhododendron, grows in its native soil, North America, fifteen or sixteen feet high; the leaves are oblong, glabrous, differently coloured underneath.

The *chrysanthum*, or Golden-flowered rhododendron, is a beautiful shrub, a native of the mountainous parts of Siberia, and flowering in June and July. It rises a foot in height; the leaves are terminal, oblong, ovate, above deep green, beneath ferruginous or glaucous; flowers large, yellow; the capsule is ovate, and contains many grey irregular seeds.

The leaves of this species, which has obtained a place in the Edinburgh Pharmacopœia, are inodorous, and have an austere, astringent, bitterish taste; water extracts their virtues either by infusion or decoction. They are stimulant, narcotic, and diaphoretic. When taken, they first increase the arterial action and heat of the body, producing diaphoresis, followed by considerable diminution of the excitement. In large doses they produce nausea, vomiting, purging, delirium, and all the symptoms of violent intoxication. It has been chiefly recommended in chronic rheumatism, and also in gout and syphillis. It is given in the form of a *decoction*, made by boiling four drachms of the leaves in ten fluidounces of water in a close vessel, over a slow fire, for twelve hours. The dose of the strained liquor is from one to two fluidounces twice a day, and gradually increased.

All these species are propagated by seeds, which should be sown soon after they are ripe, in pots of fresh loamy earth. The pots should be covered, in hard frost, with bell or hand glasses. They may also be propagated by cuttings, or parting the roots, and should have a loamy soil.

RHUBARB, or *Rheum*, a genus of plants, consisting of eight species, as follow:

The *Rhaponticum*, Common rhubarb, or Rhapontic, has large, thick, fleshy, branchy, deeply-striking roots, yellowish within; stem strong, upright, two or three feet high; leaves obtuse, heart-shaped, glabrous; flowers white, on spikes; a native of Thrace.

The *Palmatum*, Palmated-leaved, or True Chinese rhubarb, has the root thick, fleshy, yellow within; leaves palmate, pointed; petioles groved above; stems upright, five or six feet high, terminated by large spikes or flowers; buds a dull red; a native of Tartary. The root furnishes, it is supposed, the genuine officinal rhubarb.

The *Undulatum*, or Waved-leaved Chinese rhubarb, has a thick, branchy, deep striking root, yellow within; leaves somewhat villous, undulate; a native of China and Siberia.

The *Compactum*, Thick-leaved, or Compact rhubarb, has a root similar to the last; leaves slightly lobed, very obtuse, lucid, sharply denticulate, and quite glabrous; panicles nodding; a native of Tartary.

The *Ribes*, or Warted-leaved Persian rhubarb, has the root full of protuberances; leaves obtuse, slightly warted; stem upright, three or four feet high, succeeded by berry-like seeds, surrounded by a purple pulp; a very singular plant, indigenous to Persia.

The *Tartaricum*, Tartarian, or Heart-leaved rhubarb, has a fleshy root, and heart-ovate, entire, flat, glabrous leaves; a native of Tartary.

The *Hybridum*, or Hybrid rhubarb, has leaves glabrous above, a little hairy beneath, slightly lobed, acute; a native of Asia.

The *Leucorrhizum*, has transversely depressed, oval leaves; a native of Siberia.

These plants have all perennial roots; they are propagated by seeds sown in

Autumn soon after they are ripe, in the places where they are designed to remain. When the plants appear in the Spring, the ground should be hoed over to cut up the weeds, and they should be thinned so as to stand at the distance of six or eight inches asunder. After being hoed a second time, and thinned to the distance of a foot, or a foot and a half, or more, they require no other culture, except being kept clean from weeds.

The rib-stalks of the leaves are used occasionally for pudding; they make an acidulous food, which is, to some persons, agreeable.

It is not exactly known, even at the present time, from what species of the RHEUM, rhubarb is obtained. The *rhaponticum* has been supposed the rhubarb of the ancients; but the *palmatum*, the *undulatum*, and the *compactum*, afford, most probably, the different rhubarbs now found in the shops; two kinds of which are well known, the *Russian*, or *Turkey rhubarb*, and the *Indian*, or *Chinese rhubarb*. The chief difference in appearance, between Russian or Turkey rhubarb and the Indian is, that the former is in smaller pieces, generally with holes cut through them, and the outside of the root is most commonly pared off; the interior is also softer and lighter in colour than the Indian, which is in larger pieces, more compact, the outside not much, if at all, pared off; and no holes are cut through the roots. It should be known that a great portion of what is sold in this country for Russian rhubarb, is merely Indian rhubarb *Russified*: there are persons whose business it is, in this metropolis, to perform this trick. However, as we believe that good, sound, and compact Indian rhubarb answers every purpose of medicine as well, if not better than the Russian or Turkey rhubarb, there is less reason to regret this, except on account of the fraud in the price.

The roots of rhubarb have been also dried and prepared in this country, for medicinal use, and have been found extremely good; yet so powerful are the prejudices against our English production, that very little of it can be sold.

The proper time for taking up the roots in England, is from the middle of summer to January. They should be first washed clean, the fibres and external rind being pared off, and then divided into pieces of about one ounce in weight. In warm weather they should be dried in the shade; but in a wet or cold season, a hot-house, or an oven of a moderate heat, may be employed: if they dry too soon they become wrinkled, and if too slowly they become mouldy and unfit for use. They should be afterwards perforated with a hole, and suspended on packthreads to dry, so that none of the pieces come in contact with each other.

Good *Russian* or *Turkey* rhubarb, has a peculiar somewhat aromatic odour, and a bitter, slightly astringent subacid taste; feels gritty between the teeth when chewed, and tinges the saliva a bright yellow; it breaks with a rough fracture, is easily pulverized, and affords a powder of a bright buff yellow colour. Indian rhubarb has a stronger odour, and is more nauseous to the taste than the Turkey; it breaks with a more compact and smoother fracture; and its variegations of colour are more dull, and the powder is not of so bright a colour. Exposure to the air will considerably alter the colour of both, in consequence chiefly of the absorption of moisture, and therefore rhubarb powder should be kept in well-stopped bottles. Alcohol takes up about one-fifth of the weight of Russian rhubarb; water not quite one half. Of the Indian, alcohol takes up four parts in ten, and water one half. Aqueous infusions of both yield precipitates with acids, alkalies, many of the neutral and metallic salts.

Rhubarb will be found occasionally a useful medicine; but we believe that its medicinal virtues have been considerably over-rated. It is stomachic, astringent, or purgative, according to the extent to which it is administered. With a view to the first-mentioned properties, it is usefully given in dyspepsia, hypochondriasis, and in a weakened state of the bowels, combined with ginger, nutmeg, soda, or bitters. The dose for this purpose is from six grains to ten. As a purgative it operates mildly, and may be given to the youngest children. Its operation is quickened by the addition of the neutral salts, and calomel. It is usefully combined with magnesia, in the acidities of the bowels of children. It is also well adapted for many cases of diarrhœa. It is most powerful when given in substance. The dose, as a purge, is from one scruple to half a drachm.

Infusion of Rhubarb is made thus: Take of Indian rhubarb root, sliced, one drachm; boiling water half a pint. Macerate for two hours in a lightly-covered vessel, and strain. As a purge, from one fluid ounce to four of this infusion may be given, united with neutral salts, or aromatics, as circumstances may direct.

Tincture of Rhubarb: Take of Indian rhubarb root, sliced, two ounces; lesser cardamom seeds, bruised, one ounce and a half; hay saffron, two drachms; proof spirit two pints. Macerate for fourteen days, and filter. The dose, as a purgative, is six fluid-drachms; and from one to three fluid-drachms as a stomachic.

Rib-wort. See PLANTAIN.

RIBS, or *Costæ*, in anatomy, the long curved bones which are placed in an oblique direction, at the sides of the chest. Their number is generally twelve on each side; but in some subjects it has been thirteen, and in others, though more rarely, only eleven. They are distinguished into true and false ribs. The seven upper ribs, which are united to the sternum, are called true ribs; the five lower ones, which are not immediately attached to that bone, are called false ribs. The ribs defend the parts contained in the breast; and, when drawn upwards, the cavity of the breast is enlarged for inspiration.

The ribs are liable to *fractures*, and sometimes, though rarely, to *luxations*. Fractures of the ribs are discovered by pressure with the fingers. The symptoms are commonly moderate, and the patient soon gets well: sometimes, however, the pain is severe; the breathing becomes difficult, attended with cough, and perhaps spitting of blood; the pulse is also quick, full, and sometimes oppressed; these symptoms are produced from the ribs being bent in upon the lungs. In all fractures of the ribs, some blood should be taken away. If one end of the rib rise, it ought to be repressed by moderate pressure; and to prevent its rising again, a broad leather belt should be applied, pretty tight, and continued for some weeks. When a portion of the rib is forced inward, it will require the attention of a surgeon.

The symptoms arising from *luxations* of the ribs are nearly the same as those from fractures, except that in the former the pain is more severe at the joint, or articulation, and that no other spot will yield to pressure. All that can be done is, to bend the body forward, over a cask, or some such body, in order to assist the viscera in pressing out of the rib. Bandages are of little use. The patient should be kept quiet, and fed on low diet; inflammation should be prevented; and if he has a troublesome cough opiates should be given.

RICE, or *Oryza*, in botany, a genus consisting of one species only, the *oryza sativa*, supposed to be a native of Ethiopia, but now propagated in different parts of the four quarters of the globe. It affords many varieties, of which the following are the chief:

Common rice: cut six or eight months after planting.—Early rice: ripens, and is cut, the fourth month after planting.—Dry, or Mountain rice: the *paddy* of the Hindus; grows in mountainous and other dry soils. Clammy rice: with large, glutinous, very white seeds; will grow well in both dry and moist soils. But most of these varieties flourish best in a moist or swampy soil.

The rice plant has the culm from one to six feet in length; it is annual, erect, simple, round-jointed; the leaves are subulate linear; flowers terminating in a panicle. It is cultivated in great abundance in India, where the country will admit of being flooded. It is also cultivated in the southern part of Europe, and even in Hungary. The best rice is obtained from Carolina. East Indian rice is in smaller and more broken grains.

Rice plants may, in this country, be increased by seeds in the early part of the spring. The seeds should be sown in a hot bed, and when the plant appears they should be transplanted into pots filled with rich light earth, and placed in pans of water, which should be plunged into a hot-bed; and as the water wastes it must be renewed from time to time. The plants must be preserved in a stove all the summer; when, towards the end of August, they will produce grain, which will ripen tolerably well, provided the autumn prove favourable. It is probable, however, that the mountain-rice, which endures a very considerable degree of cold on the tops of the loftiest hills of India, and grows in the midst of snow, might be naturalized to our climate.

Rice is of a grey colour when first reaped, but the growers have a method of whitening it for the market. It forms a considerable portion of the food of many of the eastern nations; and with it is sometimes made the spirit called arrack.

Rice has been extolled as an article of diet, superior almost to any other vegetable: but, whatever it may be in warmer climates, where it is a common, and to many persons almost their only food, we cannot avoid thinking that it is not so well calculated for European constitutions as the potatoe: for we find that the poor in this country constantly reject the use of rice when potatoes are to be had; and whilst these can be obtained, we may venture to predict that rice will always be considered, in this country, rather as a dainty, to be eaten with sweet condiments, spices, fruit, &c., than as ordinary food. That it contains a considerable quantity of starch there can be no doubt; as a variety, and eaten in moderate quantity, when well-boiled, or in the shape of gruel, on many occasions, for the valetudinarian, it has its uses; but its utility in diarrhœa, although so strongly recommended by many writers, we beg leave to question; and by no means advise reliance upon it in such complaints. See BREAD.

Rice-bunting. See SNOW-BUNTING.

RICHES, wealth, money, or possessions. The possession of riches, and the splendour of wealth, when contemplated at a distance, have excited the cupidity and envy of those to whom they have been denied, in all ages; but if we could unmask the bosoms of the rich and the opulent, we should find little cause to regret that we have not been favoured with an abundance of this world's goods. Happiness, we may be perfectly assured, does not consist in riches: he who has no motive for exertion, or whose chief motives for exertion are withdrawn, is too often the patient of disgust and ennui. Long-continued enjoyment of the greatest good, ceases at length to please, and often passes into the limits of pain. Hence the absolute necessity of a lively and interesting succession of events, in order to insure to us even a moderate portion of earthly happiness. Those who are in the possession of riches must not, however, conclude from these remarks that riches may not be rendered subservient to the most exquisite happiness: for they assuredly may. The rich should remember that they also have DUTIES, in the active discharge of which that happiness can only be found. Let them

> Protect the lowly, feed the hungry ones,
> And be the orphan's father.
>
> SOUTHEY.

See AVARICE, CRUELTY, and PROSPERITY.

RICINUS, *Palma christi*, or MEXICO SEED, a genus of plants comprising six species, natives of both the Indies. The species most worthy of notice is the *communis*, or Castor-oil tree. See CASTOR-OIL.

RICKETS, or *Rachitis*, a disease peculiar to children from the age of about six months, to two or three years; and if not cured before the fifth or sixth year the body continues weakly and deformed. The chief seat of this complaint is the bones, which become soft and deficient in the matter which gives them solidity. The disease is known by an enlargement of the belly, head, and joints; the swelling first begins in the wrists and ancles, extends to the knees and elbows; and subsequently the bones throughout the body are enlarged, and lose their consistence and solidity. The teeth come forward slowly, soon decay, and fall out. If the infant be put on its legs before it is cured they bend and become crooked. The spine also, with the ribs and breastbone become distorted, and the action of the lungs and heart considerably impeded.

Rickets may arise from various causes, such as scrofulous or venereal taints in the parents or nurse; it is likewise promoted by feeding the child with poor and watery diet, fish, unleavened farinaceous food, great quantities of sweet things, &c. Bad nursing, and putting the child too soon on its legs will also contribute to the production of the disease; and sometimes it follows agues and other debilitating diseases. There is evidently a deficiency of the secretion of the calcareous matter which gives solidity to the bones. The digestion is also more or less impaired.

In the cure of this disease the chief attention should be paid to diet, and healthy exercise. The diet should consist chiefly of animal food, beef-tea, &c.; vegetables should be sparingly given, if at all; and none of the flatulent or windy. Even bread, which should be exceedingly well baked, ought not to be given in large quantities; nothing made with unfermented flour should pass into the stomach. All the animal jellies may be given; and the juice of roasted beef, mutton, &c., and, indeed, the flesh of these meats, provided the stomach can bear them. The drink may be milk, or milk and water. Dandling, and carrying the child much in the open air, will also be of great service.

The cold bath should be religiously avoided. But the tepid, warm-bath, or tepid salt-water bath, promises advantage, and may be adopted. The following powders, in this complaint, are well recommended: Take of prepared chalk one drachm; of powdered rhubarb one scruple; of calomel six grains. Mix, and divide into twelve equal parts. Half a paper may be given every night to an infant from six to twelve months old, and a whole paper to a child of from two to four years old. Attention to the state of the bowels, in this complaint, is extremely necessary. Costiveness may be obviated, generally, by small doses of magnesia and rhubarb, or senna, and diarrhœas by the chalk mixture. See CHALK.

In the western isles of Scotland this complaint is said to be effectually cured by the application of an oil to the joints, extracted from the liver of the skate fish. The wrists, ancles, and other parts are rubbed with the oil till a fever is excited; and when no fever can be excited by the anointing, a flannel shirt, dipped in the oil, is put upon the body of the patient. This last process will, it is said, soon effect a cure.

RICKETS, a disease in sheep, produced by an internal worm, the *tænia cerebralis*, of the same genus as the tape-worm, found in vast numbers in the brain of sheep, or spinal marrow, immediately beneath the brain. It chiefly attacks yearling lambs, and is distinguished by giddiness and staggering, and is sometimes called the *dunt*. The animals which produce this disease consist of numerous animalcules, united by their base to a large common vesicle; if this vesicle be broken, the disease becomes completely incurable, as these minute worms, in size not larger than a grain of sand, are each of them furnished with from thirty-two to thirty-six hooks on the head, by which they fix themselves firmly to the substance of the brain, or its coats. This complaint is said to be hereditary, nor does it appear that any cure has been found for it.

RIDICULE, wit of that species which provokes laughter. It has been said that ridicule is a test of truth. But to this we can by no means agree. Truth, from its very nature, is unobtrusive; ridicule, on the contrary, is bold, piquant, and exciting. Many persons obtain the attention of mankind solely by their powers of exciting ridicule. Ridicule and punning are both children of the same family; they both imply, or at least, are usually found with, a deficiency of original thought, and impotence of the reasoning powers. They belong to that order of mind denominated frivolous; but they are, nevertheless, exceedingly mischievous to the progress of truth. How many powerful truths are constantly obliged to hide their heads by the force and prepollency of ridicule: a weapon, which the worldly and the time-serving know how to employ with a powerful and mischievous effect. Against ridiculous associations and their effects, we cannot, therefore, be too much upon our guard. See PUNNING, and SATIRE.

Ridges, in agriculture. See HUSBANDRY.

Riding. See HORSEMANSHIP.

RIGHT and WRONG, in morals, two states of our actions, the first implying that they have a good and beneficial tendency, and the last, that they are bad and injurious. The nature of happiness and misery, pleasure and pain, is independent of all positive institution: that is, it is immutably true, that whatever tends to produce a balance of the former, is to be desired, is *right*; and whatever tends to procure a balance of the latter, is to be rejected, is *wrong*. In like manner, the promulgation of virtue, truth, and political justice, must always be right. There is, perhaps, no action of a rational being, that has not some tendency to promote these objects, and, consequently, that has not a moral character founded in the abstract nature of things. It is the duty of every one to exert his faculties in the discovery of right, and to endeavour to carry into effect all the right with which he is acquainted. What a boundless field of DUTIES for the whole family of man!

RING-BONE, in farriery, a bony excrescence on the lower part of the pastern, generally, but not always, causing lameness. The only effectual remedy is firing, and the earlier this is done the better. See FIRING.

Ring-dove. See PIGEON.

Ring-ouzel. See THRUSH.

Ring-tail. See FALCON.

RING-WORM, or *Herpes miliaris*, an eruption on the face, consisting of numerous small pustules, which rise closely in contact with each other, and appearing, generally, in a circular form; it is attended also with a painful itching. It is a very troublesome disease, and very difficult of cure. Common writing-ink has been applied to such eruptions; vinegar steeped in the bruised roots of garden sorrel, for three days, and mushroom catchup, have been also recommended. See LEPROSY and TETTER.

The *Ringworm of the heads* of children is highly infectious. See SCALD HEAD.

RIVER, an inland current of water, formed by the confluence of brooks, small streams, and mountain torrents.

Rivers are not only greatly useful to man, but they are some of the most magnificent ornaments of the globe. The largest rivers of Europe are the Volga, whose course is about 17 0 miles;—the Danube, whose course is about 1300 miles;—the Don is about 800 miles;—the Nieper is about 1000 miles;—the Rhine is 600 miles, and the Rhone 400 miles in length.

The largest rivers of Asia are the Hoan-ho, about 2000 miles in length;—the Yenesi, about 1750 miles;—the Ob is 1900 miles;—the Lena 1570 miles; and the Kian Ku is supposed to be 2300 miles in length. The Ganges is estimated at 1400 miles. The Indus, or Sindé, is about 1000 miles. The Euphrates is 400 miles.

The largest river of Africa is the Nile, about 2000 miles long. The

Niger is also a long river, but much of its course is unknown. The Senegal and the Congo are also considerable rivers.

In North America, the chief rivers are the Missouri, including the Mississippi, having a course of about 2000 miles. The Ohio is 1188 miles. The St. Lawrence is a large river, and navigable for ships of the line to Quebec, 400 miles from the sea; its length is about 700 miles. The Maranon, or Amazon, in South America, is about 2300 miles, and the Rio de la Plata is about 900 miles in length. The Orinoco is also a considerable river.

River water is much softer, and much better adapted to economical purposes than that obtained from springs.

River-horse. See HIPPOPOTAMUS.

RIVINA, in botany, a genus consisting of four species, natives of America, or the West Indies. The following are cultivated: the *humilis*, or Downy rivina; the *lævis*, or Smooth rivina; and the *octandra*, or Climbing rivina. The flowers and berries of the lævis are scarlet; and the juice, extracted from the latter, is sometimes used to stain paper and linen bright red; it will also colour the white petals of fresh flowers with a similar hue.

Roach. See CARP.

ROAD, an open way or public passage, forming a communication between one place and another.

The first law enacted respecting highways and roads in England, was in the year 1285; the next in 1346. Various others have been since enacted. But the statutes of the 13th of Geo. 3. c. 78, commonly called the *general highway act*, and another of the 13th of Geo. 3. c. 84, commonly called the *general turnpike act*, are those of most importance. Both these acts are, however, susceptible of considerable alteration and amendment.

The public attention has latterly been considerably engaged on the subject of roads, and road making; and a committee of the House of Commons has also examined evidence relative to the state of the roads, in order to amend the highway and turnpike laws throughout the kingdom, but nothing has been yet done by the legislature. A Mr. M‘ADAM, who has for some time had the management of the turnpike roads in the neighbourhood of Bristol, and whose roads are spoken of as being of a very superior construction, has published a tract on road-making, which is certainly deserving attention, although there is a species of quackery about this gentleman's statements, against which it is well to be on our guard. The following are his chief rules for the repair of old, and the formation of new roads.

For the repair of an old road. No addition of materials to be made unless there is not a quantity of stone equal to ten inches in thickness. The stone, already in the road, is to be loosed up, and broken, so as that no piece shall exceed *six ounces* in weight. The road is then to be laid as flat as possible: a rise of three inches from the centre to the side is sufficient for a road thirty feet wide. The stones when loosened in the road, are to be gathered off by means of a strong, heavy rake, with teeth, two and a half inches in length, to the side of the road, and there broken, : no stones should be broken *on* the road. When the great stones have been removed, and none left exceeding six ounces in weight, the road is to be put into shape, and the rake employed to smooth the surface. The stone which has been broken by the side of the road, is then to be spread carefully on it, by scattering it evenly and equally, and not by shovels-full. Only a small space of road should be lifted at once, and the whole should be lifted entirely across: two or three yards at one lift is enough. Many roads which are composed of chalk, soft stone, and other bad materials, it will be improper to lift at all: in such cases, the high places should be cut down, the surface kept smooth, and afterwards, stone of a better quality should be laid on. Sometimes a road should be lifted, the bad materials separated from the good, and the bad entirely removed. When additional stone is wanted on a road that has consolidated by use, the old, hardened surface of the road is to be loosened with a pick, in order to make the fresh materials unite with the old. This, however, is not to be understood without exception. After a road is repaired, as ruts will unavoidably be made for some time in a new road, a careful person must attend for some time after the road is opened for use, to rake in the track made by wheels. The best method of breaking stones is by persons *sitting*. The tools to be used are, strong picks, but short from the handle to the point, for lifting the road. Small hammers, of about one pound weight in the head; the face the size of a shilling, and well steeled; the handle short. Rakes with wooden heads ten inches long; teeth iron, two and a half inches long, and very strong. Shovels, very light, and broad-mouthed.

Every road is to be made of broken stone, without mixture of earth, clay, chalk, or any other matter that will imbibe water, or be affected by frost; nothing is to be laid on the clean stone under the idea of *binding*.

On the structure of a new road. Roads placed upon a hard bottom wear away more quickly than those upon a soft soil; and those on hills sooner than those on level ground. A new road should not be sunk below, but rather above the ordinary level of the adjacent ground; care should, at any rate, be taken, that there be a sufficient fall to take off the water, so that it should be always some inches below the level of the ground upon which the road is intended to be made. Having secured the soil from *under* water, it is next to be secured from rain-water, by a solid road made of clean dry stone or flint, so selected, prepared, and laid, as to be perfectly impervious to water. The rules for the repair of roads must also be carefully attended to here. The thickness of the road is immaterial as to its strength for carrying weight, this object is already obtained by providing a dry surface over which the road is to be placed as a covering or roof to preserve it in that state: for if water passes through a road it soon goes to pieces. Many good roads, made in the manner here directed, have not exceeded six inches in thickness. We consider, however, ten or twelve inches a more proper depth for new roads. The measure of substituting pavements for convenient and useful roads, Mr. M'Adam says is a desperate remedy to which ignorance has had recourse. But we cannot avoid thinking, that in Blackfriars road, London, a pavement would be superior to any road which Mr. M'Adam could devise. Indeed, we remember seeing this gentleman trying his hand on the repair of this very road, about three years since, but his method has not succeeded better than his predecessors.

In truth, a road of thirty feet wide will, in general, unless it be kept in extraordinary repair indeed, require six inches elevation in the centre: those, therefore, who rely upon Mr. M'Adam's rules will very frequently err. The only use in making or keeping the surface of the road circular is to prevent water from lying upon it; as it is universally known, that when water lies on a road it soon becomes injured. The stones being *broken small*, is the chief feature in Mr. M'Adam's road-making; but he is entirely mistaken, if he supposes himself to be the original inventor of this method. On a part of the road to which he alludes in his evidence, given before the committee of the House of Commons, viz. the road passing through the parish of Huntspill, Somerset, the stones were broken small, and the road was exceedingly good, thirty years ago; care being taken, as soon as the ruts were observed, that they should be filled up. This road is considerably more circular than Mr. M'Adam recommends; perhaps, unnecessarily so. But it has always been, nevertheless, a good road; and is, we presume, at the present moment good, although the stones are not, perhaps, broken so small as they used to be, at the period to which we allude. This road is always repaired with lime-stone.

The *materials for making roads* are

various : one of the best is, unquestionably, good, hard, compact *limestone.* In the neighbourhood of London, the roads are chiefly formed of *gravel* ; and this, for light carriages, &c. is found to answer tolerably well; but gravel is, notwithstanding, the opinion of Mr. M'Adam, a bad material, when the wear of the road is great, as the neighbourhood of the metropolis sufficiently evinces. And, the present *flat* state of these roads, contributes to make them worse. *Flint* is not, under suitable management, a bad material for roads; *whinstone* and *pebbles*, will also make good roads. *Granite* may also be found useful; and, in some districts, we have known a mixture of *chalk* and *flint* make good roads. *Vitrified*, or *burnt clay*, for which, as well as for manufacturing other substances for the formation of highways, Mr. Chambers has lately taken out a patent, may occasionally be found advantageous in the making of roads; the *refuse matter* and *scoria* from founderies, are also excellent materials for roads. See M'Adam's *Remarks on the present System of Road-making*, 8vo.; and *Observations on the Formation of Turnpike, and other highways*, by A. H. Chambers, Esq, a small tract well deserving the attention of road-makers. See also No. 5, of the *London Journal of Arts and Sciences.*

Roan-tree. See Pear.

ROARING, a disease of the horse, so named from the wheezing noise made by the animal in breathing. It is supposed to be caused by an effusion of coagulable lymph in the windpipe. It is generally reckoned incurable. Ulcers in the larynx are also known to produce roaring. Whatever produces flatulence in this complaint, should by all means be avoided.

ROASTING, in domestic economy, that process by which food, and chiefly animal food, is rendered edible, by being turned on a spit, or other suitable apparatus, before a fire.

This process is principally conducted by the assistance of a jack; (see Jack) but meat may also be roasted by merely folding together, and twisting a few threads of worsted, then suspending them in a perpendicular direction, and attaching them to the mantle-piece, and also to the substance to be roasted, and twirling it occasionally round. This maybe called the poor man's jack.

We have, under the article aliment, mentioned the superiority of roasted meat; this superiority, doubtless, arises from the retention of most of the nutritive properties *in* the meat, in consequence of the mode in which it is dressed; whereas, when animal food is boiled in water, a considerable portion of its nutritive properties, and particularly the gelatine, is abstracted from it. There is but one objection to this superiority of roasted over boiled meat, and that is, that as in roasting, the outside of the meat, particularly the fat, very often acquires a kind of acridity by the heat, it is not adapted for dyspeptic stomachs: persons whose digestion is indifferent, should therefore, by all means, avoid fat generally, but more particularly the outside fat of roasted meat. See Aliment.

ROB, a term used occasionally in pharmacy, for the juice of a plant boiled down with sugar to a thick consistence : in other words, a jelly.

Robbery. See Felony.

Robin-red-breast. See Warbler.

ROBINIA, a genus of plants comprising twenty species, natives of Siberia, or America. The following are cultivated : the *pseudo-acacia*, or False acacia. See Acacia. The *hispida*, Rose acacia, or robinia. The *caragana*, or Siberian abrupt-leaved robinia. The *frutescens*, or Shrubby robinia. The *pygmæa*, or Dwarf robinia. The *spinosa*, or Thorny robinia. The *violacea*, or Ash-leaved robinia. The *mitis*, or Smooth Indian robinia. They may all be raised by seeds, cuttings, layers, and suckers; the two last by seeds or cuttings, in pots of light earth, plunged into a hot-bed.

Rocambole. See Garlic.

ROCCELLA, or *Lichen rocella*, a species of lichen which produces a blue dye; it has been employed also in allaying the tickling coughs in phthisis, and hysteria.

Roche, or *Roach-alum*. See ALUM.

Rochelle-salt. See TARTRATE of SODA.

ROCK, or Rocks, those hard substances abounding more or less on the various parts of the globe, and more commonly denominated stones.

Rocks are arranged into *Primitive*, or those which lie the lowest and form the basis of all the rest; which are altogether chemical or crystallized compositions, and evince not the smallest portion of carbonaceous matter, or animal or vegetable relics. Such are granite, gneiss, micaceous shist, argillaceous shist, porphyry, sienite, serpentine, primitive lime-stone, primitive trap, quartz, topaz-rock, and kieselchiefer, or flint-slate.

Transition rocks consist of those that, excepting when the general order is broken in upon, lie immediately over the primitive rocks. They agree with those of the first class in containing no remains of organized beings, or at least but seldom; but they have a considerable resemblance to those of the third class. Transition lime stone, grauwacke, and transition trap, are transition rocks.

Secondary rocks are distinguished by the remains of organized bodies, which they contain abundantly; they are usually stratified. The following is a list of these rocks mentioned in the order, or according to the supposed time of their formation. Sand-stone, secondary lime-stone, chalk, gypsum, rock-salt, pit-coal, argillaceous iron-stone, and secondary traps. The last contain basalt, wacken, basaltic tufa, secondary mandlestein, porphyry shistus, graustein, and secondary grunstein.

Alluvial rocks constitute by far the greatest portion of the actual surface of the earth, and have been washed down by rains and other causes from the older and loftier mountains, and, consequently, consist of a great multiplicity of materials combined together, as sand, gravel, loam, &c.

Volcanic rocks is the name given to all the minerals thrown out during volcanic eruptions, the chief of which are denominated lava. See LAVA.

Rock-crystal. See QUARTZ.

Rock-oil. See BITUMENS.

Rock-fish. See GOBY.

Rock-rose. See CISTUS.

Rock-salt. See SALT.

ROCKET, ROCKET - VIOLET, DAME'S-VIOLET, or *Hesperis*, a genus of plants consisting of ten species, chiefly natives of the South of Europe; one the *inodora*, common to the pastures of our own country. The *histis*, or Pale mountain-rocket, with a bristly branched, spreading stem; the *matronalis*, or Garden-rocket, with a simple, erect stem, and ovate, lanceolate leaves; and the *verna*, with an erect, branched, stem, and heart-shaped leaves, are the chief. The first and second species are biennial plants. The first is a native of Hungary, and has fragrant flowers, but is not now often seen in our gardens. The second is a native of Italy, of which there is a variety with double flowers, very beautiful, and much cultivated in our gardens. They are propagated best by suffering the seeds to be scattered in the autumn, or by sowing them at the same period. The last species is a native of France, and propagated as the former.

ROCKET, or *Brassica eruca*, an exotic species of cabbage. See CABBAGE.

Rod, the golden. See GOLDEN-ROD.

Roe. See DEER.

ROE, the eggs or spawn of fishes produced or deposited by the female. See MILT. Many persons are extremely fond of both the roe and milt of fishes; but they should not be eaten by the dyspeptic.

ROE - STONE, or OOLITE, the stone with which the houses in the city of Bath are built. See LIME.

Roller, in agriculture. See BARLEY, CLOVER, HUSBANDRY, &c.

ROLLER, or *Coracias*, a genus of birds consisting of twenty-five species, scattered over the globe; the most deserving notice is the *garrula*, or Common roller, which is blue, back red; quill-feathers black, primary quill-feathers beneath, blue; middle tail - feather dirty green, the rest blue; size of the jay; is sonorous, gregarious, migratory, and timid; builds in trees, particularly the beech; feeds on insects, frogs, nuts, and corn; eggs pale green, with numerous dusky spots; inhabits Africa, Syria, and Europe. The rest of the species do not very essentially differ.

ROLLING MILL, a machine employed to laminate or flatten metals to a uniform thickness, by passing them between iron rollers fixed in a strong frame, and turned round by water or other power. It is used chiefly for making iron bars and plates; for brass and copper plates; and for the reduction of gold and silver to the proper thickness for the artificer.

Roman alum. See ALUM.

ROOD, the fourth part of an acre, or 1210 square yards. See ACRE.

Roof. See TIMBER and BUILDING.

Rook. See CROW.

Room. See BED-ROOM, and BUILDING.

ROOT, in botany, that part of a plant which grows beneath the earth, imbibes the nutricious juices; and conveys them to the stem, and other parts of the plant, above the ground.

Root-of-scarcity. See MANGEL WURZEL.

ROOTLET, a little root or fibre.

ROPE-MAKING, the art of uniting animal or vegetable fibres into an aggregate line, so that the whole may concur in one joint action, and be employed under the form of string, cord, halter, haulser, rope, or cable.

The most common materials used for rope-making are hemp and flax. But various others are occasionally used; such as the guts and skins of animals; the inner bark of some plants, dried grass, rushes, &c. The chief material, however, is hemp. See HEMP.

In order to produce the greatest quantity of strength in a cord, it is well-known, that the fibres of which it is composed, must be twisted together, or entangled in such a manner, that they may form one continuous cord. But such twisting of the fibres, in order to produce the greatest strength, is limited: for we know that we can twist a skain of fibres so very hard, that it will break with any attempt to twist it harder. It is, therefore, a fundamental principle in rope-making, that all twisting beyond what is necessary for preventing the fibres from being drawn out without breaking, diminishes the strength of the cordage, and should be, as much as possible, avoided. It is necessary also in rope-making, to contrive the twist in such a manner, that the tendency to untwist in one part may be counteracted by an opposite tendency in another.

We cannot go into the minute particulars of this manufacture, nor can we detail the various patents, which have been from time to time obtained for improvements in rope-making. We may, however, mention that, Mr. MITCHEL, Mr. CHAPMAN, Mr. HUDDART, Mr. BELFOUR, and Mr. CURR, obtained patents some years since, for new, or improved methods of manufacturing cordage.

A patent for making chain cables, or moorings of iron, was granted in 1813, to T. BRUNTON, Esq. which from a recent trial in the Court of King's Bench, has been demonstrated to be a very useful invention, and the strength of which cable is superior to any other known.

Rose, the disease so called. See ERYSIPELAS.

ROSE, or *Rosa*, a genus of shrubs, comprehending forty species, scattered over the globe, six indigenous to our own country. The different species run so closely into each other, that it is difficult to determine between species and varieties; whence some botanists resolve the whole into the single species, the *rosa canina*, or Dog rose, believing all others to be varieties of this alone. The following are the chief:

The *Lutea*, or Single yellow rose.

A variety of this, called the *Austrian rose*, is deserving particular notice, for the splendid colour of its flowers. The stalks, branches, and leaves, are similar to the single yellow rose, except that the leaves are rounder; the flowers are also single, but larger; the petals have deep indentations at their points, are of a yellow colour on the outside, and of a reddish copper colour, or orange scarlet, within; they have either no smell, or a disagreeable one, and soon fall away. It has sometimes flowers entirely yellow in one branch, and copper-coloured in another; the flowers are most abundant, and, in a manner, cover the whole shrub. It blossoms in May and June. It is said that this variety of the rose will not blossom near the smoke of London; and we never remember to have seen it in the neighbourhood of the metropolis. But we have cultivated it ourselves in Somersetshire; where it blossoms most splendidly, if *planted against a wall;* and there we also found the flowers, for the most part, when expanded, an intense scarlet. It is readily propagated by suckers.

The *Sulphurea,* or Double yellow rose; most probably a variety of the preceding.

The *Blanda,* or Hudson's bay rose; when full grown unarmed; but when young having prickles; branches round, shining reddish.

The *Cinnamonea,* or Cinnamon rose; flowers single, longish, of a pale colour; armed with great thorns; resembles the eglantine: a double kind, in some parts of England called cinnamon rose.

The *Arvensis,* or White dog rose, is smaller than the common dog rose; flowers always white.

The *Pimpinellifolia,* or Small burnet-tree rose, with white flowers.

The *Spinosissima,* or Scotch rose, has the petals white, or cream-coloured; yellow at the base; delicately fragrant; sometimes striped with red; several varieties.

The *Parviflora,* or Small-flowered American rose, is single, and of a pale reddish colour: a variety with a double flower.

The *Lucida,* or Shining-leaved American rose; flowers single; bright red, with little scent.

The *Carolina,* or Carolina rose; flowers red, and appear late in the summer.

The *Villosa,* or Apple-tree rose: leaves fragrant when rubbed; flowers pale rose-colour, not very fragrant; fruit globular, larger than any of the other sorts, bristly, and blood-red; the pulp is sometimes made into conserves, like the canina: a native of our woods.

The *Provincialis,* Provence rose, or cabbage rose, well-known, and one of the most beautiful of the species; flowers large, double, the most fragrant of all the species: varieties numerous. From the flowers of this species, rose-water is chiefly distilled; see below. This is, we presume, the rose designated *centifolia,* by the London college.

The *Centifolia,* or Hundred-leaved rose, with flowers double, and of a deep red, but little scent; has the fruit, peduncles, petioles, and stem bristly; supposed a native of China: varieties numerous.

The *Gallica,* or Red rose, has large flowers but not very double; when well dried, will hold their scent and colour longer than most other species. Many varieties. From this species, the conserve of roses of the shops is made. See CONSERVE, and below.

The *Damascena,* or Damask rose, has the flower soft, not very double, but of an agreeable odour; a native of the South of France. Some of the pharmacopœias direct this rose also to be used medicinally; but the directions are rarely complied with, the Provence rose being more common, and almost always used in its stead. See below.

The *Sempervirens,* or Evergreen rose, has perennial leaves, and small single white musky flowers, stalks slender, and trail on the ground, unless supported; a native of Germany.

The *Pumila,* or Dwarf Austrian rose, has the branches with great abundance of prickles; fruit large, pear shaped.

The *Turbinta* or Frankfort rose is nearly unarmed; flowers thick, double colour pale red; fruit large.

The *Rubiginosa,* Sweet-Briar, or eglantine. See BRIAR, the SWEET.

The *Muscosa,* or Moss-rose, has the petioles, peduncles, calyx, and branch-lets, thickly covered with viscid glandular moss; flowers elegant, and of an agreeable odour; native soil doubtful.

The *Moschata*, or Musk-rose, rises ten or twelve feet high; stalks too weak to support themselves; flowers white, of a fine musky odour; a variety with double flowers; a native of Barbary.

The *Alpina*, or Alpine rose, is a low shrub; flowers solitary, red.

The *Semperflorens*, or Deep red China rose, is three feet high; flowers large, semidouble, dark-red, extremely fragrant, coming out in succession during the greater part of the year, but more sparingly in the winter months; a native of China.

The *Alba*, or White rose, a native of Europe.

The *Canina*, Dog rose, hip, or hep-tree, found wild in our hedges, both red-flowered and white-flowered, and too well known to need description. The fruit surrounded with a pleasant acid pulp, from which is prepared a conserve. See CONSERVE.

All these kinds, whether indigenous or of foreign origin, are propagated either by suckers, by layers, or by budding them on the other sorts of roses; the last method is only practised on the finer sorts; the best sorts of stocks for this purpose, is the Frankfort rose, and the season, June; great care must be taken afterwards, that the stalk produces no suckers at the bottom, as these would soon starve the bud.

When roses are propagated from suckers, they should be taken off annually, and planted into nursery beds, or into the places where they are to remain. But the best method of obtaining vigorous plants is by laying down the shoots in autumn; the following autumn they may be taken off from the old plants, and removed to the places where they are to remain. Roses may be transplanted almost at any period when their leaves are off, but the autumn is, perhaps, the best time; they require mostly to have their dead wood cut out, and the suckers removed every year; the luxuriant branches may be also shortened.

The following preparations of roses are ordered by the London College.

Rose water. Take of the fresh petals of the hundred-leaved, or Provence-rose, eight pounds. Pour over them as much water as will prevent burning, during the distillation. Distil off a gallon. The usual weight of roses for a gallon of water is, however, only six pounds, or even less.

A superior rose water may be distilled from the salted petals of the roses, which will keep much better than when drawn from the fresh petals. See FLOWERS, PRESERVATION OF.

The medicinal virtues of rose-water are of no importance. It is, however, an agreeable menstruum for dissolving white vitriol and sugar of lead, for lotions for the eyes. As a scent it is, of course, well known.

Syrup of roses. Take of the petals of the hundred-leaved, or Provence rose, dried, seven ounces; boiling water four pints; refined sugar six pounds. Macerate the rose petals in the water for twelve hours, and strain; evaporate the strained liquor in a water-bath down to two pints and a half; then add the sugar so as to make a syrup,

This syrup is weakly purgative; and is given as a laxative in very weak habits and to infants. The dose is from two fluidrachms to twelve or more.

Conserve of the red rose. See CONSERVE.

Infusion of roses. Take of the dried petals of the red rose half an ounce; boiling water, two pints and a half; diluted sulphuric acid three fluidrachms; refined sugar an ounce and a half. Pour the water on the rose petals in a covered glass vessel; then drop in the acid, and macerate for half an hour. Finally strain the liquor and add the sugar to it.

This infusion owes its chief astringency to the acid. It is used alone in the colliquative sweats of phthisis, and as a gargle in sore throat; it is chiefly however employed as an elegant vehicle for more active remedies, particularly Epsom salt, the nauseous taste of which it completely covers. The dose is from two fluidounces to four.

Honey of roses. Take of the petals of the red rose dried two ounces; boiling water one pint and a half; of clarified honey two pounds and a half. Macerate the petals in the water for six hours; then to the strained liquor add the honey, and boil it down to a proper consistence by means of a water bath.

It is used as an addition to detergent and astringent gargles.

In drying the petals of the *red rose*, the bud should be picked just before it is about to expand; the white heels should be cut off, and those and also the seeds rejected. The petals should be then separated and exposed to a warm temperature, but not to the sun, and turned often till they are completely dry. The petals of the *Provence rose* require the same attention in drying, but their heels need not be cut off, nor need they be picked before the flower is expanded.

Ottar of roses is the fine essential oil of the rose. It is obtained by distillation, either from the dry, or more generally, from the fresh flowers. It may be obtained in this country; and if, after the distillation of common rose-water, the still be urged with rather more heat than usual, a fat, butyraceous, white substance comes over: this is the essential oil, or ottar of roses. It is, however, more commonly brought from India, where it is obtained in greater perfection. It is made there thus: A clean cask, or large glazed earthen jar, is filled with rose leaves, carefully separated from the calyxes; and spring water is poured upon them just sufficiently to cover them; after which the vessel with its contents is set in the sun for two or three days, and taken under cover during the night. At the end of the third or fourth day, small particles of yellow oil will be seen floating on the surface of the water, which in the course of a week will have increased to a thin scum. This scum is the ottar of roses; it is taken up by a little cotton tied to the end of a stick and squeezed into a phial.

ROSE-BAY, Oleander, or *Nerium*, a genus of plants comprehending nine species, all natives of India and Arabia. The following are those chiefly cultivated.

The *Oleander*, Common rose-bay, or oleander, rises with stalks, eight or ten feet high: bark smooth, purplish in plants with red flowers, white in those with light green flowers; leaves dark green, rigid, acute; flowers at the end of the branches, in large loose bunches, purple, crimson, or dirty white; a native of the Levant, flowering in July and August. In warm, dry summers, this plant appears to great advantage; but in cold and moist seasons, it requires a green, or hot-house, to bring the flowers to perfection. Many varieties.

The *Odorum*, Sweet-scented rose-bay, or oleander, has the flowers as in the preceding species, but of a pale red, and a musky scent; indigenous to India, and flowers from June to August.

The *Antidysentericum*, or Oval-leaved rose-bay, has flowers herbaceous, or greenish white. The bark is said to be a specific in dysenteries, whence its specific name; but it is very little known in this country.

The *Coronarium*, or Broad-leaved rose-bay, is an elegant shrub, with handsome flowers; a native of the East Indies, and blowing most part of the summer.

All these plants may be increased by layers, cuttings, and root suckers. The first is hardy and only requires to be protected in severe winters. The others require the green or hot-house, except in the height of summer.

Rose-bay, the dwarf, See Rhododendron.

Rose-ray, willow herb. See Willow herb.

Rose campion. See Corn-cockle.

Rose, the China. See Syrian mallow.

Rose, the guelder. See Guelder rose.

ROSE, the **Japan**, or *Camellia*, a genus of plants comprising two species, both natives of Japan; one of which is a tree, the other a low shrub. The flowers of both are elegant, and variegated in their hues; the leaves are perennial. The lower species only can be cultivated in this country, and this requires the green-house.

ROSE of Jerico, or *Anastatica*, in botany, a genus, the only known species of which is the *hierochuntica*, a native of Palestine, an annual plant, and often found in our gardens. It is propagated by seeds, which should be sown in a moderate hot-bed in pots, in which the plants are designed to remain; it blossoms in August.

Rose, the rock. See Cistus.

ROSE-ROOT, **Rose-wort**, or *Rhodiola*, in botany a genus consisting of one species, having a thick fleshy root, which, when cut, emits an odour like roses. The root has many heads, whence issue a multitude of stalks, about nine inches long, surrounded with fleshy leaves; flowers yellowish, of an agreeable smell, found on the alpine rocks, and is cultivated by planting the cuttings of the stalks in the beginning of April; or by parting the roots in Autumn.

ROSE-WOOD, or *Amyris balsamifera*, a species of the genus Amyris, of which nineteen species have been described. The following are chiefly worthy of notice: the *elemifera*, see Elemi;—the *gileadensis*, see Balsam;—the *toxifera*, see Poison-ash. The first-named species is an elegant and odoriferous tree of Jamaica, of late much and deservedly esteemed by our cabinet-makers.

ROSE-WOOD, **Rhodium**, or *Lignum rhodium*, the wood or root of a tree, supposed to be the *genista canariensis*. It is brought to this country from the Canary Islands in long crooked pieces, full of knots, externally of a whitish colour, internally of a deep yellow, with a red coat. The largest, smoothest, heaviest, and deepest coloured pieces should be chosen. Rhodium wood has a slightly bitterish, somewhat pungent balsamic taste, and a fragrant smell, especially when scraped, or rubbed, resembling that of roses. An essential oil is obtained from it, commonly called *oil of rhodium*, which is used chiefly as a perfume; it is also supposed powerfully to attract rats and mice; but this is doubtful.

Rose-wort. See Rose-root.

ROSEMARY, or *Rosmarinus*, a genus of plants consisting of two species, as follow:

The *Chilensis*, a native of Chili, with petioled leaves.

The *Officinalis*, or Common rosemary, a native of Europe, with evergreen, sessile leaves: flowers pale blue, variegated with purple and white: of this there are two varieties; Silver rosemary, with white-striped leaves; and Golden rosemary, with yellow-striped leaves. Both varieties grow wild in the south of France, in Spain and Italy, on rocks near the sea, where they multiply prodigiously; with us they grow most vigorously, on a moist rich soil; but they are much sweeter scented when they grow on a poor soil, and on such they bear the severity of our seasons much better than where they grow more freely. They are propagated by planting slips or cuttings of them in the spring of the year, on beds of light earth, and when rooted, they may be removed to the places where they are to remain; the best season, however, for transplanting them is August.

The leaves and flowers of common rosemary, have a grateful aromatic odour, and a bitterish, warm, pungent taste, depending on an essential oil which appears to be combined with camphor. Alcohol extracts its virtues completely; but water only partially. The essential oil is obtained, of course, by distillation with water. The leaves afford the greatest; the flowers the smallest quantity.

Rosemary is stimulant, and, according to some, emmenagogue. It has been given in the form of infusion in nervous head-ach, hysteria, and chlorosis, but it is now scarcely ever prescribed, unless as a scent to sternutatory powders.

The dose, in substance, may be from ten grains to two scruples; and from one drachm to one drachm and a half in infusion.

The *Essential oil of rosemary.* Twenty-four pounds of the plant yield, on distillation with water, one ounce of this oil, which is almost colourless, and the odour is not quite so agreeable as the plant itself. It deposits crystals of camphor when long kept. It is stimulant, and frequently enters into the composition of liniments. The dose, as an internal remedy, may be from two drops to six, on sugar.

Spirit of rosemary, formerly called *Hungary water,* is made thus: Take of fresh rosemary tops two pounds; proof spirit a gallon; water sufficient to prevent burning. Macerate for twenty-four hours; then distil off a gallon by a gentle fire.

A more expeditious, and perhaps a better way of making it, is the following: Take of oil of rosemary one ounce; camphor one drachm; of rectified spirit of wine three pints; of water one pint and a half. Dissolve the oil and camphor first in the rectified spirit of wine, to which add the water. Should it be cloudy the addition of a small portion of powdered alum to the mixture, which should be afterwards well shaken, will, upon its standing at rest for a few hours, make it completely fine.

This is a fragrant perfume, and is also used in the preparation of liniments, &c. See Lavender and Liniment.

ROSEMARY, the Wild, Marsh cistus, or *Ledum,* a genus of plants comprehending three species, natives of the north of Europe and Carolina; one species is said to be produced in Yorkshire, and other counties of England, with a strawberry-like flower; but this is doubtful.

ROT, a term applied to a disease in sheep, which appears to resemble pulmonary consumption, complicated with dropsy; as, on dissection, the lungs are found knotted with tubercles and abscesses, and there is generally water in the chest or belly. The disease often affects the liver also, and sometimes other internal parts, as the mesenteric glands, &c. The rot has, therefore, been distinguished by different names, such as the pulmonic, the hepatic, and the general rot. In the rot of the liver, that organ is generally infested with large quantities of the liver fluke. See Fluke.

The rot is generally esteemed an incurable disease, so that prevention is our chief object. It is said that flooded lands, and their premature unsubstantial herbage, will occasion the rot; and that any land flooded after the middle of May, whatever be the soil, will be very likely to induce the rot. But the probability is, that the cold and dampness of the situation, is the chief cause of the malady. It is, therefore, most advisable, when the farmer is obliged to feed his sheep on swampy grounds, wet fallows, or lately flooded lands, not to suffer them to rest, far less to remain on such dangerous places; but to let them pick as much grass as may be deemed expedient, and then drive them immediately either to high grounds, or folds, where they may rest, particularly by night, and receive a sufficiency of dry food, either hay or straw.

Several nostrums have been recommended for the cure of this disease, but we believe they are all inefficient, and not to be depended on. It is said that sheep which are fed upon lands occasionally overflowed by the sea, never have the rot, hence the efficacy of salt in the prevention of this complaint. Although we can hardly hope that the giving of salt to sheep affected with the rot will cure them, we advise a trial; and we also advise, when sheep are fed upon swampy and wet lands, that they should have a portion of salt given them occasionally. Two ounces per week is the quantity we recommend. See Ox and Salt.

The eyes of sheep, in order to detect this complaint, ought to be examined frequently. When the blood-vessels appear red, and in great numbers on the interior of the eye-lids, and also on the eye-ball, the sheep is supposed to be in good health. But if they be pale, few in number, and faint-coloured or livid, the sheep is in a debilitated state, or affected with the rot. In all cases where the blood-vessels have entirely disappeared the mutton is bad. By frequently examining the eyes in dangerous seasons, shepherds might always discover the rot before their sheep begin to shrink.

It does not appear that the disease is contagious.

Rot, the Dry. See DRY-ROT.

ROTATION OF CROPS, in agriculture, that course of different crops, which is followed for two, three, or more years, in order to make them the most advantageous to the farmer, and with the least injury to the land.

In particular cases some farmers have adopted a course of only two years' rotation of crops; as *wheat* and *beans* alternately; or *wheat*, with crops of *potatoes* alternately. On the richest loams, or alluvial soils reclaimed from the sea, or in the immediate neighbourhood of large towns, where manure is plenty, such a system may be adopted. In the neighbourhood of London, many farmers obtain three crops every two years; such as winter tares, and turnips, and corn, generally wheat, and preserve the land in good condition.

A *three years' rotation* may be *Potatoes, wheat, clover*; or *Swedish turnips, barley, clover.*

A *four years' rotation* may be *turnips, barley, clover, wheat*; or, which is said to be very superior, *winter tares*, followed by *turnips*, and both fed upon the land by sheep, then *wheat, clover*, and *barley*, or *oats*; or *turnips, winter-wheat* sown in spring, or *barley, clover*, and *oats*; or, with careful management, *turnips, wheat, grass*, mostly sheep-fed, and four-fifths *winter-wheat*, sown in the spring, and one-fifth *oats*; other rotations may be mentioned: *turnips*, drilled *wheat, clover*, drilled *wheat*; or *potatoes, wheat, clover*, and *oats*; this last is only calculated for the neighbourhood of great towns, where there is plenty of manure.

A *five years' rotation* may be *potatoes, wheat, grass, pasture, oats.* Upon mossy or peaty soils the following has been recommended: *potatoes* or *turnips, oats, barley* or *big, clover, pasture*, and *oats.* The following is said to be preferable to every other. A *cleansing crop*, of whatever kind is best suited to the soil, as *turnips, tares*, or *cole seed*, to be hoed, not stand for seed; a *crop of white corn*, of the kind best suited to the soil, to be laid down with seeds; *clover*, either grazed or mown; *beans*, where suited to the soil, to be sheep-fed and hoed, or some other meliorating crop, adapted to the soil; and lastly, *white corn* suited to the soil. This course is adapted to any kind of soil except fen land.

Six years' rotation is peculiarly calculated for large farms. On clay lands it may be *Fallow*, winter tares, Swedish turnips, or cabbages, *wheat, clover, oats, beans, wheat.*—On sandy lands it may be *carrots*, tares, turnips, or potatoes; *barley*, or oats, with seeds; *hay*, or soiling; *pasture*; *pasture*; *oats.*—On loams it may be *turnips*, or fallow; *wheat*, or barley; *seeds*, either clover alone, or clover and rye-grass, with the addition of a little yellow or hop clover; *oats*; *tares*, peas, or beans; *wheat.*

Seven years' rotation may be *turnips, barley, beans, wheat, barley, clover, wheat.*

Eight years' rotation, upon rich loams and clays may be *fallow*, with dung; *wheat*; *beans*, drilled and horse-hoed; *barley*; *clover and rye-grass*; *oats*, or wheat; *beans*, drilled and horse-hoed; and *wheat.* These protracted rotations, we ought to observe, are condemned by respectable agriculturists.

When any farm or district is about to be improved, we should begin with such crops as are the most likely to produce manure; hence barley should be avoided. Two exhausting crops should never be attempted in succession, unless the soil is very fertile. The crops should be so arranged that the labour of ploughing for each, and of sowing, weeding, reaping, &c. may proceed in regular succession. All forcing crops, or *frequent repetitions of the same* *articles, or species,* should be avoided. Those crops should be raised which are best calculated for the extirpation of weeds. As a general system, the most productive rotation, on a *light soil,* will be *winter tares, and turnips sown early; barley, clover,* and *rape* in July to destroy the wire-worm, and *wheat.*—On *strong soils, fallow,* winter-tares, or beans; *winter sown wheat,* drilled for the sake of the succeeding crops; *clover;* and *oats.* In upland farms the following has been recommended: *turnips*; *bear* or big; *clover,* and *red oats.* If the soil be poor it ought to be pastured for two years or more, before it is broken up for oats.

Rottenness of the bones. See CARIES.

ROTTEN STONE, or *Cariosus,* a genus of the class earths, one species only. It consists of alumine, silica, and carbonate of lime, with a small portion of iron, it is light, soft, falling to powder in water; colour Isabella yellow, dull brown, or grey; found in Derbyshire, Glamorganshire, and other coal counties. It is principally used for polishing metals and other substances.

ROUEN, after-grass; the grass which grows after a field has been mown.

ROUGE, a celebrated cosmetic, prepared from the red dye of the safflower. See SAFFLOWER.

ROWEL, in farriery, an artificial abscess, or drain, formed by making an incision in the skin, about an inch in length, with a pair of scissors. The cellular membrane under the skin is torn with the finger all round the incision, to the extent of about an inch, so as to admit a circular piece of leather, with a hole in the centre, wrapped in tow, and smeared with turpentine and digestive ointment. The parts in which rowels are inserted are, usually, the chest, belly, thighs, and under the jaws.

Rowels are beneficial in some cases, yet they are sometimes injurious; and in some cases they become gangrenous. The application of rowels requires considerable judgment.

ROYAL SOCIETY, an academy, or body of persons, instituted in England, by royal Charter, on the 15th of July, 1662; and by subsequent charters, by which they were erected into a corporation, consisting of a president, council, and fellows, for promoting natural knowledge, and endowed with various privileges and authorities. The members are elected by ballot; two-thirds of the members present are necessary to carry the election in favour of a candidate. The council consists of twenty-one members, including the president, vice-president, treasurer, and two secretaries; ten of which go out annually; and ten new members are elected instead of them, all chosen on St. Andrew's day. Five guineas are paid by each member at his admission, and one shilling per week, or 52s. per year, as long as the person continues a member; or in lieu of the annual payment, a composition of 25 guineas in one payment.

The ordinary meetings of the society are once a week, from November till the end of Trinity term next summer.

Their hour of meeting is now about eight o'clock in the evening. This society has published during the last 150 years, numerous and important papers on various subjects, which are known by the title of the PHILOSOPHICAL TRANSACTIONS. But we cannot avoid thinking that, at the present time, the energies of this celebrated body are considerably on the wane.

Rubber, Indian. See INDIAN RUBBER.

RUBY, a precious stone of a red colour. See GEM.

RUBEFACIENTS, in medicine, those substances, which, when applied a certain time to the skin, induce redness, without blistering.

Rud. See CARP.

RUE, or *Ruta,* a genus of plants, comprehending seven species, natives of the south of Europe, and of Palestine. The following are cultivated:

The *Graveolens*, or Common rue, an evergreen perennial, a native of the south of Europe, but cultivated in our gardens; it rises to the height of two or three feet, shrubby and branching, having a grey bark; the leaves are doubly pinnate; colour blueish green, or glaucous; they have a powerful unpleasant odour, and a hot, bitter, nauseous taste; in a recent state, they are so acrimonious as to blister the skin; distilled with water, they yield a pungent volatile oil, on which their virtues chiefly depend.

Rue is stimulant and antispasmodic, and is supposed also to be emmenagogue; it is used chiefly in hysteria, and flatulent colic. A strong infusion exhibited by the anus, has been found of great service in relieving the convulsions of infants, arising from flatulence, and other intestinal irritations. The dose of the powdered leaves is from fifteen grains to two scruples, twice or thrice a day.

Oil of rue is also stimulant and antispasmodic. It is given, sometimes, in hysteria, and the convulsions of children, arising from dentition; and is used as a rubefacient in palsy. The dose is from two to five drops, rubbed with sugar, or mucilage.

The *Montana*, or Mountain rue; the *chalepensis*, or African rue; and the *pativina*, or Three-leaved rue, a native of Padua.

They may all be propagated by seeds, slips, or cuttings.

Rue, the meadow. See MEADOW RUE.

Ruff, a bird. See LAPWING.

Ruffe, a fish. See PERCH.

RUM, a name applied to a peculiar spirit distilled from molasses, and other coarse saccharine matter, obtained from the manufacture of raw sugar, in the West Indies.

The common process in Jamaica is as follows: the usual materials for the fermentation are molasses; or, in other words, the treacle which drains from the sugar, scummings of hot cane juice, and sometimes raw cane liquor, lees, or *dunder* as it is called, and water. The dunder answers the purpose of yeast, and is usually prepared by a separate fermentation of cane-sweets and water. The materials being mixed in due proportion, which are about equal parts of scummings, dunder, and water, the fermentation begins very soon, and in twenty-four hours the liquor is fit for the first charge of molasses, which is added in the proportion of three gallons for every hundred gallons of the liquor. Another charge is added a day or two afterwards. The heat in the fermentation should not exceed 90° or 94° so that in the West Indies, it is necessary to keep the fermenting tubs as cool as possible. The fermentation subsides in six or eight days, when the liquor grows fine, and fit for distillation. In about two hours after lighting the fire, the spirits begin to run in a still of 1200 gallons; and it is collected as long as it remains inflammable.

The first spirit is called *low wines*, and it is rectified in a smaller still to the Jamaica proof, which is that in which olive oil will sink. About 220 gallons of proof rum are obtained from 530 gallons of low wines.

Notwithstanding it has been asserted that rum is the most wholesome of spirituous liquors, we are obliged, from accurate observation, to be of a different opinion, and to assert, that it is one of the most unwholesome with which we are acquainted, whiskey excepted. Its unwholesomeness consisting in a gross essential oil, with a considerable quantity of which it is impregnated, and which is particularly injurious to the stomach. See BRANDY and GIN.

Rennet. See CHEESE.

Running thrush. See THRUSH.

RUPTURE, or *Hernia*, is a swelling produced by the falling down, or protrusion of some part or parts which ought naturally to be contained within the cavity of the belly.

The places in which these tumours make their appearance are the groin, the navel, the labia pudendi, the upper and fore-part of the thigh, and every point of the fore-part of the abdomen. The parts which form these tumours are a portion of the omentum, a part of the intestinal canal, and sometimes, though very rarely, the stomach and liver. As they happen to make their appearance in the groin, the scrotum, the thigh, the navel, or the belly, they are called inguinal, scrotal, femoral, umbilical, or ventral.

It was formerly supposed that scrotal hernia arose from a forcible division or rupture, made in the peritoneum, and this opinion is still entertained by many uninformed persons; but it is now well known, in both scrotal and femoral hernia, that the parts pass out from the abdomen, by openings which are natural to every human body, as well to those who have ruptures, as to those who have not.

The most common causes of ruptures are the following: violent coughing, crying, laughter, or great bodily exertion; falls; particularly when there is a general laxity of the fibres. Sprains. It has also been observed, that the people of those countries where oil is much used as an article of diet, are particularly liable to ruptures. Every forcible compression of the bowels by tight bandages, may also produce rupture. Soldiers, singers, dancers, porters, and women of difficult parturition, are very subject to this malady. In children, it often proceeds from crying, obstructions of the bowels, flatulence, and bad nursing.

The complaint is known by an elastic white swelling, attended with pain, which becomes more violent on every exertion; nausea, vomiting; and obstruction of the bowels. The size of the swelling varies exceedingly in different subjects, and in different stages of the same disorder. At first it is commonly of no considerable size, but, by repeated descents of the bowels, its bulk becomes very considerable indeed.

The event, however, of the disease depends on the nature of the substances included. In many cases if the protruded parts be not timely reduced, the most fatal consequences, such as stricture, inflammation, and mortification, may be apprehended, although the portion of intestine thus strangulated be inconsiderable; but if the omentum alone be propelled it is seldom attended with danger, because this membrane is not of such importance in the animal economy as the viscera and intestines.

The first object in this complaint should be to reduce the protruded parts before a strangulation takes place. For this purpose, the patient must be laid on his back, the head being low and the breech elevated by pillows. Warm fomentations of chamomile flowers, mallows, &c. are next to be employed, the effect of which will also be greatly promoted by an injection formed of a decoction of similar herbs, with a table-spoonful of sweet oil. After having persevered in these applications for some time, attempts should be made to reduce the tumour by gentle pressure; and if this prove ineffectual, greater force must be used. But the advice and assistance of an expeenced surgeon is, in this complaint, the safest course, and should be at once obtained.

When the parts are restored to their natural situation, to prevent a relapse, a sufficient degree of pressure must be applied to the ruptured spot. This will be most effectually obtained by the wearing of a *truss.*

In concluding this article we would observe, that persons who labour under hernia, and who will not consent to the wearing of a truss, should remember, that they cannot be too careful in their mode of living, and in keeping the bowels regular; and that all violent exertions is sure to increase the disorder. Those persons in whom the disease is recent, should as soon as possible submit to the means necessary for its reduction, and at once adopt the use of a truss, which will most probably obviate much future inconvenience. See TRUSS.

RUPTURES in the HORSE generally happen in some part of the belly, and may be distinguished from other swellings by disappearing when pressed upon by the fingers by which the gut is put back into its natural cavity, and returning as soon as the pressure is withdrawn. A rupture also sometimes happens in the scrotum or testicle bag. In many cases of rupture, horses do their work without suffering any inconvenience. In other cases, however, an operation is necessary, and this should be performed by a person most skilful in the anatomy of the horse. Strangulated ruptures in horses sometimes prove fatal.

RUPTURE-WORT, or *Herniaria*, a genus of plants comprising six species, chiefly natives of Spain and the Alps; two of them, the *glabra* and *hirsuta*, common to our own country; the former was formerly supposed good for ruptures, but is of no importance: cows, horses, and sheep, will eat it.

RUSH, a name given to many plants of different genera. For *Sweet-rush*, see FLAG, THE SWEET. For *Bull-rush*, see BULL-RUSH. For *Sweet-rush*, see SPIKENARD.

RUSH, or *Juncus*, a genus of plants comprehending forty-one species, mostly natives of Europe; nineteen common to the marshes, bogs, and wet pastures of our own country; several indigenous to America; a few of the Cape; of the different species nearly half have naked, the rest leafy culms. The whole are generally regarded as weeds: yet in many countries, especially Holland, several species are regularly tied up in bundles as fuel. A few of them are of still higher value, some by their growth giving tenacity to the banks of rivers: others affording useful matting for floors and chairs; others furnishing, from the pith, a wick for the night-candle called rush-lights. See CANDLE.

The *squarrosus*, or Moss-rush, indicating a barren soil;—the *conglomeratus*, or Conglomerate rush;—the *effusus*, or Spreading rush; and the *acutus*, or Sea rush, are the most common. All the rushes dried and burnt will produce potash; the ashes are besides an excellent manure.

RUSH, the BOG, or *Schœnus*, a genus of plants, comprehending forty species, chiefly natives of the Cape; many of the West Indies and America; four indigenous to the bogs of our own country. The greater number have a round, the rest a three-sided culm.

RUSH, the FLOWERING, or *Butomus*, a genus, consisting of one species, the *umbellatus*, having a many-flowered umbel, flowers pale rose colour. It is often cultivated in our gardens as a beautiful flower, where a standing pool will allow of its growth.

RUSH-NUT, the root of the *Cyperus esculentus*, a native of Italy, where it is collected and eaten, being more delicately and pleasantly tasted than our chesnuts. See CYPER-GRASS.

Rush-light. See CANDLE.

RUST, the oxide of a metal. Iron, for instance, when exposed to air, soon becomes tarnished, and gradually changed into a brown or yellow powder, well known by the name of rust. This change is produced by the gradual combination of the iron with the oxygen of the atmosphere: it is, of course, an oxide of iron. Oil, or a mixture of quick lime and mutton fat, rubbed over iron utensils, are the best to preserve them from rust by preventing the access of air.

RUST, in agriculture, a disease to which wheat and many other vegetables are liable. It appears in the form of a rusty iron-coloured powder scattered about the leaves.

A distinguished naturalist is of opinion, that this disease is produced by a minute parasitic fungus, or mushroom, on the leaves, stems, and glumes, or chaff of the living plant; and that the roots of the fungus intercepting the sap intended by nature for the nutriment of the grains, render the corn lean and shrivelled; and, in some cases, rob it completely of its flour. The straw also becomes black and rotten, and unfit for fodder. Damp weather is peculiarly favourable to the propagation of this disease. These are, perhaps, some of the causes of rust; but it is said by some experienced agriculturalists, that the chief cause is having the land in too rich a state for corn crops. This, however, may also arise from fungi, as it is well known that dung is a powerful promoter of their growth; and that wheat produced on the site of a dung-hill is always rusted, even in the most favourable seasons. A too frequent repetition of crops of wheat, more especially when accompanied with large quantities of manure, will often produce the same effect.

Among the remedies likely to diminish the effect of rust, the following have been particularly recommended: *the cultivation of hardy sorts of wheat; early sowing; raising early varieties; thick sowing; changes of seed; consolidating the soil after sowing; using saline manures; improving the course of crops; extirpating all plants which are receptacles of rust; and protecting the ears and roots of wheat by rye, tares, and other crops.*

Red wheats are hardier than the white, and the thin, or smooth-chaffed, are less apt to be rusted than the thick-chaffed sorts. The variety called creeping wheat; and a species of cone wheat, originally from Courland, have been also recommended, as less liable to rust. Sowing wheat early will, also, sometimes prevent it, especially if a sort can be obtained which also ripens early. Treading the ground after sowing is, also, advantageous. Of saline manures, common salt furnishes a remedy for rust, in the proportion of about thirty bushels per acre.

If previous to a crop of wheat, the dung be applied to a smothering crop, as tares, hemp, or cole seed, on strong lands, and a full crop of potatoes on light soils, the wheat afterwards is rarely known to be rusted.

Among the common plants, the colt's foot and the yellow corn thistle are said to be so favourable to the growth of these fungi, that no field in which they are met with can be free from rust. The box, the abele, or silver poplar, willows, and especially the bramble retain the fungi, and ought to be kept under. Several trees retain the old fungus on their bark, such as the black alder, the common willow, the birch, and sometimes oak coppice. The barberry retains this source of mischief in any fissure or cleft in the bark, exhibiting numerous black pustules: these should be cut off. The practice of cutting the hedges when a crop of wheat is sown, ought to be universally adopted, as a means of lessening the quantity of fungi which would otherwise injure the crop. In the northern counties of England, where it is the practice to sow what is called *meslin*, or a mixture of rye and wheat, it has been observed that the wheat thus raised is rarely infected by the rust; the same circumstance has been observed in Italy.

If a field be evidently affected by the rust, and the progress of vegetation stopped, the only way to preserve the straw and the grain, if any has been formed, from being entirely lost, is to cut it down immediately, even although the crop should not be ripe.

Much observation, however, is still wanting, in order to ascertain in every instance the cause, and to guard against the consequence of rust.

Ruta Baga. See TURNIP.

RYE, or *Secale*, a genus of culmiferous plants, consisting of four species, natives of Crete, or the Archipelago, of which only one, the *secale cereale*, having glumes, with a rugged fringe, is cultivated in this country. It is distinguished into two varieties, winter and spring rye, from the different times of sowing.

Rye succeeds very well in any kind of dry land, even on the most barren gravel. The winter rye is that which is generally propagated by farmers. It is usually sown in the autumn, after a summer's fallow, in the driest time that can be had. Two bushels of seeds are allowed per acre; but two bushels and a half, or even three bushels are occasionally employed, where it is intended to be fed off as green food.

A little sprinkling of dung or mud upon rye land, will greatly advance the crop, though it is laid but half the thickness that it is for other corn. When wheat is combined with rye, it is in many districts termed *meslin*; the proportion of the latter to the former, being regulated by the nature of the soil; the largest proportion of rye is given to the lightest soils. But, except for the purpose of preventing the rust, see **Rust**, this mixture of wheat and rye is not to be recommended, in consequence of their ripening at different periods.

When this sort of crop is grown for the purpose of grain, it will be constantly necessary to keep it clean in the early stages of its growth by hand weeding and hoeing, when they appear requisite; but where the intention is merely that of affording a supply of green food for the use of sheep or other animals, in the more early spring months, no further culture will be wanted after the crop has been put into the ground.

The straw of this grain is superior to that of wheat, both for the purpose of thatch, and for the use of the collar makers.

Rye is known to be ripe when the straw is yellow, the ear bends, and the grain feels hard. It is not apt to shed the seeds; and, therefore, if there be many weeds among the crop, it may be left lying upon the ground eight or nine days after it is cut, before it is bound up, if the weeds be not dry sooner: for otherwise the weeds will grow moist in the barn, and cause the whole to give, and not to thrash well, and sometimes they will make it musty. As it is a grain that will grow sooner than any other if it be wet, care must be taken if rain fall, after it is wet, to turn it as it lies on the ground every other day; and at the same time to keep the ears as far from the earth, and as much above the stubble as may be. If it be pretty clear of weeds, it may be bound as soon as it is cut. If either this grain or wheat lodge upon the ground, it is best to cut them, even though they are not ripe: for the stalk being broken, will yield no more nourishment to the ear.

Rye as food, contains, next to barley, the greatest quantity of soluble or nutritive matter: according to Sir **Humphry Davy**, the whole quantity of which in 1000 parts, is 792; of which mucilage or starch forms 645 parts; saccharine matter 38 parts; and gluten or albumen 109 parts. In consequence of its containing so large a portion of gluten, rye is the properest article for making good bread, next after wheat. Rye bread is also said to be attended with the beneficial effects of preventing costiveness. But rye is liable to a disease, called *ergot*, in France, and *horned*, or *spurred rye* in this country; and when eaten in this state is exceedingly poisonous. For the symptoms and mode of treatment of persons who have eaten horned rye, see **Poisons**.

It is said that every kind of poultry have such an antipathy to this grain, that they avoid the place where it vegetates; and hence it has been advantageously used in *head ridges*, around farm-houses and yards, as a kind of protection to other grain.

Rye grass. See **Darnel**.

S.

Sabadilla. See **Caustic Barley**.

SABELLA, a genus of testaceous worms, consisting of twenty-five species, inhabiting the coasts or rivers, chiefly of Germany; a few of India and America; and three or four of our country; they are found often affixed to stones. The *alveolata*, consisting of numerous parallel tubes, communicating by an aperture, forming in the mass an appearance of honey comb, and inhabiting on rocks, the coasts of our own country may be taken as a specimen. The shell, which is from two to three inches long, is composed chiefly of sand, and of fine fragments of shells.

Sable. See **Otter**.

Saccharum. See **Sugar**.

SACCHAROMETER, an instrument used by brewers for ascertaining the specific gravity of wort. It is made of brass, and graduated from 100 to 0.

It is so adjusted in weight, as to sink to the point marked 0°. in distilled water, at the temperature of 70°; and when immersed in a liquor of the same temperature, and of the specific gravity of 1,100, it is buoyed up to the mark 100, just above the bulb. The intermediate space is divided into 100 equal parts, and consequently will indicate intermediate degrees of specific gravity. The specific gravity of wort for ale, is usually about 1,090 to 1,100; for table beer from 1,020 to 1,030. The heavier the wort, the greater quantity of sugar it, of course, must contain. See BREWING.

SACCHOLACTIC ACID, an acid obtained from milk. See MILK.

SACK, a generic term for any kind of coarse bag. It also implies a measure for corn, &c. It contains different quantities, according to the kind of article; or sometimes measures more or less, according to the customs of different districts of the kingdom.

A sack of flour is 280lbs, (i. e.) five bushels of 56lbs. each. A sack of potatoes is 240lbs, or three bushels of 80lbs. each; a sack of wool contains twenty-two stone, each stone being fourteen pounds.

SACK, a wine formerly used in this country, and supposed by some to be Rhenish; others think it was Canary. But a recent and more probable conjecture is, that it was Sherry. The term sack is most probably corrupted from *sce*, dry; sherry being a dry wine in the language of the vintner.

SACRUM, or *Os sacrum*, in anatomy, that bone which terminates at the bottom of the back behind; the point of which, however, is called the os coccygis. In young subjects it is composed of five or six pieces, but in more advanced age it becomes one bone. It is somewhat in the shape of an irregular triangle. In females it is usually shorter, broader, and more curved than in men, by which means the cavity of the pelvis is more enlarged. The os coccygis, which terminates the point of the sacrum, is in the child merely a cartilage; during youth it becomes distinct bones, which in manhood unite, and form one conical bone; and in advanced years becomes firmly united to the sacrum. It has no holes like the last mentioned bone; nor has it any communication with the spinal marrow, nor does it transmit any nerves.

SADDLE, a stuffed seat, laid on the back of a horse for the convenience and security of the rider. There are several sorts of saddles, but they are too well known to need being described.

That form of the saddle must be best which contributes at once to the ease of the horse and the rider. The forward projection of the pads where the knees rest, and the whole being well stuffed, are the chief consideration. The saddle should be secured with two girths only, and those nearly, or entirely, one upon the other. A crupper is deemed unsightly and unfashionable, and where a horse has a good shoulder, is generally unnecessary; but in descending hills, a crupper is of manifest advantage. When a crupper is used, care should be taken that the strap is very broad and soft; and some recommend a candle being sewed up within that part which goes beneath the tail. For horses in danger of slipping through their girths a breastplate should be provided, which is fastened to the saddle.

SAFFLOWER, BASTARD SAFFRON, or *Carthamus*, a genus of plants, comprehending sixteen species, chiefly natives of the South of Europe and Mediterranean coasts. The *tinctorius*, and *lanatus*, are the chief. The dried flowers of the first are frequently mixed with saffron to adulterate it.

This dyeing material contains two colouring substances, a yellow and a red. The former is only soluble in water, and of little value; the latter is soluble in alcalies, and being precipitated from them by several acids, forms a beautiful red pigment; which is sometimes used for silk dyeing, but more commonly in the preparation of *rouge*, of which it forms the chief ingredient. It is prepared by tying the plant in a linen bag, and then washing it incessantly with water, using much squeezing and rinsing till the water passes off colourless. The residue in the linen bag now consists of the fibrous part of the plant, the valuable red fecula. This last is extracted by digesting the safflower in a solution of carbonate of soda without heat, which would impair the colour; an orange yellow colour is obtained, which on saturation with acids turns red, and gradually deposits a red fecula, which is rouge. Lemon juice is the acid usually preferred. As this colouring matter is extremely intense, it is often diluted with finely powdered talc. Alcohol also dissolves the red part of safflower.

Safflower is propagated by seeds sown early in the spring in drills, at the distance of two feet and a half from each other. They require hoeing in their after culture. The flowers should be cut as they ripen, and be dried gradually in a kiln, or by a moderate heat.

Safety-lamp. See LAMP.

SAFFRON, or *Crocus sativus*, is a perennial bulbous plant, found wild in some parts of this country, which affords reason for supposing it indigenous; but it is probable that it was originally brought from Asia.

It is cultivated for medicinal and other uses in great abundance, in Cambridgeshire and Essex, chiefly, however, at Stapleford. It flowers in September. The flowers appear before the leaves, are sessile on the bulb, of a violet, or lilac colour, and raised on a slender white tube; the leaves are linear, of a deep green colour, with a white nerve in the centre. The corolla is parted into six, nearly elliptical segments; the stamens are shorter than the corolla and crest; and the style, which is the length of the corolla, hangs out at one side between the segments. The stigma is of a deep orange colour and odorous.

Saffron is propagated by parting the roots. The most favourable season for transplanting it is when the old leaves are dead, and the new shoots have not yet appeared. The month of June is said to be the best time. It requires a light dry soil.

In the preparation of saffron, the flowers are gathered early in the morning, just as they are about to blow. They are then spread upon a table, and the stigmas, with a proportion of the style, carefully picked out of the flower, which is thrown away as useless. The stigmas are then dried upon a portable kiln, of a peculiar construction, over which a hair cloth is stretched, and over it several sheets of white paper are laid, upon which the wet saffron is spread between two and three inches thick. It is now covered with other sheets of paper, and over them is laid a coarse blanket, five or six times doubled, which is pressed down with a board and a large weight after the fire is lighted. The first heat is strong to make the saffron sweat; and after an hour, when it is formed into a cake, it is turned, and the same degree of heat continued for another hour; the fire is then reduced to a moderate heat, which is kept up for twenty-four hours, during which time, the cake is turned every half hour, so as to dry it thoroughly. It is then fit for market.

In the shops is found saffron from Italy, France, and Spain, besides the English. But such is the state of commerce, that *no cake* saffron whatever should be bought, whatever may be its appearance or pretensions, as it is almost always most shamefully adulterated. *Saffron in hay*, as it is called, that is in a loose state, is the only kind, which can be met with good, and that is frequently adulterated with safflower and other articles.

Good saffron has a penetrating odour, which in large quantities affects the eyes somewhat like the odour of the onion; a warm, pungent, bitterish taste, and a rich, deep, orange red colour. It yields, by distillation, a quantity of a heavy, golden, yellow-coloured, essential oil. It yields its properties to water, alcohol, proof spirit, wine, and vinegar. It is often used as a colouring material, but as a medicine it is of very inconsiderable efficacy. It is, however, esteemed a cordial. The dose in substance is from ten grains to half a drachm; a *syrup of saffron* is made thus: take of saffron an ounce; boiling water a pint; refined sugar two pounds and a half. Macerate the saffron in the water for twelve hours, in a slightly covered vessel; then filter the liquor, and add to it the sugar. A mere colouring syrup.

Saffron, the meadow. See MEADOW SAFFRON.

SAGAPENUM, a gum-resin, brought to this country from Smyrna, Aleppo, and Alexandria, and is the concrete juice of an unknown Persian plant, supposed, however, to be obtained from the *ferula persica*. It has a rank smell, something like garlic, and a hot, acrid, bitterish taste, not unlike assafœtida, but weaker. It is antispasmodic and emmenagogue, and externally discutient. It is occasionally employed in hysteria and chlorosis, but is not in our judgment, a medicine of much importance. It is usually given in substance, in doses from ten grains to half a drachm, made into pills. See ASSAFŒTIDA.

Saffron of Antimony. See LIVER OF ANTIMONY.

———— *Iron.* See IRON, AND COLOUR-MAKING.

SAGE, or *Salvia*, a genus of plants, comprehending seventy-six species, scattered over the globe; two indigenous to our own meadows. The following are the chief:

The *Officinalis*, or Garden sage, has lanceolate-ovate, crenulate leaves; whorls, few flowered: several varieties: the common green sage; the wormwood sage; green, with a variegated leaf; the red, with a variegated leaf. This species is indigenous to the South of Europe, and in all its varieties largely cultivated among ourselves, chiefly as a culinary vegetable. It was formerly in great repute as a medicine, but is not, in truth, of much importance. Infusions of the leaves are grateful to the stomach in febrile complaints attended with nausea; and when drunk cold, they are said to check hectical perspirations. The infusion with vinegar makes a useful gargle in sore throat, and relaxations of the uvula. The dose of the powdered root is from fifteen grains to half a drachm; or of an infusion made with one ounce of the dried leaves, and one pint of boiling water two fluidounces may be taken every three or four hours.

The *Pomifera*, having heart, elliptic, obtuse, downy leaves, with a crenulate margin, and crowded whorls, is a native of Syria and Crete.

The *Horminum*, or Clary, has obtuse, crenate leaves; upper bractes barren; larger ones coloured; a native of Greece, and formerly in the materia medica, but now expunged.

The *Sclarea*, or Garden clary, has wrinkled, heart-shaped, villous, serrate leaves; floral bractes longer than the calyx, concave, pointed. A native of Syria and Italy.

The several sorts of sage are propagated by cuttings planted in any of the summer months, watering and shading them till they have taken root; after which, they should be removed to a dry soil, when they may have the benefit of the sun. The different kinds of clary are propagated by seeds sown in the spring, in the places where they are designed to remain. They flower in June and July, and ripen their seeds in autumn. The garden clary is also propagated by seeds, which should be sown in the spring on beds of fresh earth. When the plants are fit to be removed, they should be transplanted in rows two feet apart; they will thrive in any soil not wet.

SAGE, the INDIAN, or *Lantana*, a genus of plants comprising fifteen species; chiefly natives of America, a few of India, and the Cape. The following are those principally cultivated in our gardens: the *camara*, or Wild sage, with opposite, decussate, ovate, pointed, serrate, hairy leaves; stem unarmed; flowers in umbelled heads, the colour of which is yellow tinged with red, very beautiful. The *involucrata*, or Sea-side sage, with obtuse, wrinkled, downy leaves; stem unarmed. The leaves have an agreeable fragrance, and are used as a demulcent in catarrhs. The *aculeata* or Prickly sage, has opposite, ovate, and some cordate leaves; stem prickly; flowers yellow. They are all American plants, and may be propagated by seeds or cuttings; the last requires a stove heat in this country.

SAGO, SAGUS, or *Sagu*, a dry fecula brought to this country from the East Indies in reddish-coloured grains; it is obtained from the pith of several species of palm; but chiefly, it is said, from the *cycas circualis*, growing in the islands of Java, Molucca, and the Philippines; and also from the cabbage palm. See CABBAGE-TREE.

Sago becomes transparent by boiling in water, and forms a nutricious and pleasant food for many persons in a variety of complaints. It appears to consist chiefly of starch or mucilage, and does not ferment in the stomach. The most delicate mode of preparing it is to boil it a short time in water, and throw the water away. Fresh water is then to be added; and it is afterwards to be boiled till all the grains become thoroughly transparent: there is no necessity for their being completely dissolved, unless they should be, in their undissolved state, disagreeable or inconvenient to the sick.

SAINFOIN, COCKS-HEAD, or *Hedysarum onobrychis*, is a species of the genus HEDYSARUM, one hundred and seventeen of which have been enumerated. They are scattered over the four quarters of the globe; but the greater number are natives of the East or West Indies. They may be subdivided into sections, having simple leaves; with a single pair of leaflets; leaves ternate; leaves pinnate.

Sainfoin, the first-mentioned species, is a native perennial plant, growing in meadows and pastures, and chalky soils, where it flowers in June and July: several varieties: the White-flowered; the Blue-flowered; the Purple-flowered; the Striped-flowered; and the Long-leaved hoary-flowered sainfoin.

This plant, although less generally introduced into cultivation than clover, is one of the most valuable of the grasses; and is peculiarly well calculated for all poor, dry, shallow, chalky, rocky, light, sandy, or gravelly soils; but it will not answer where there is a great depth of mould.

The seeds of sainfoin may be put in either alone or with any of the spring corn crops; but with barley, after turnips, is considered the best method. In whatever method it is sown, as the seeds are larger than those of most other grasses, they should be covered with more care, and to a somewhat greater depth. The proper season for sowing this seed is, upon the whole, the end of February or beginning of March: for in dry weather it does not vegetate. The quantity of seed, broadcast, is from one to four bushels, or more, per acre. But if drilled, in rows two feet asunder, half a bushel is sufficient.

On poor soils, when the crop is thin, it will be advisable not to mow it the first year, nor feed it by cattle in the winter, in order that the plants may spread; but, afterwards, two crops may be often cut from it in one year, the same as from clover. In its green state it is highly useful for all sorts of stock; although some suppose that it affects the flavour of the milk when given to cows. It makes very good hay for either horses or other cattle. It is also a very useful article for soiling, in its green state. It lives much longer on the land than clover, for which reason, on the soils above-mentioned, it is to be preferred to that plant. It is said that it will yield abundant crops for ten or even more years successively; especially if, after the expiration of seven or eight years, it be manured with dung.

Saint Anthony's fire. See ERYSIPELAS.

Saintfoin. See SAINFOIN.

SAINT IGNATIUS'S BEAN, the seed of a gourd-like fruit, the produce of the *ignatia amara*, a genus consisting of one species, an Indian tree, with long round branches, and climbing shoots; flowers nodding, white, odorous; the fruit heart-shaped, and covered with a dry bark.

The St. Ignatius's bean is of a roundish figure, very irregular and uneven, about the size of a middling nutmeg, semi-transparent, and of a hard, horny texture. It has a bitter taste, and not much smell. It is said to be used in the Philippine islands, in all diseases, acting as a vomit and purgative, &c

It is, however, considered a poison in this country, and as such, the mode of treatment of those who have taken it will be found under POISONS, and also NUX VOMICA, which see.

Saint James's wort. See GROUNDSEL.

Saint John's wort. See JOHN'S WORT.

Saint Peter's wort, (shrubby). See HONEYSUCKLE.

SAINT VITUS'S DANCE, or *Chorea,* a convulsive disease, first appearing by a kind of lameness or instability of one of the legs, which the patients draw after them in a ridiculous manner; nor can they hold the arm of the same side still for a moment. And if they should be desirous of drinking they use a number of odd gesticulations before they can bring the cup to their mouths; so that they appear to *dance* in an involuntary manner.

The cause of this disease is a debility of the whole system; it attacks weakly boys, and more especially girls, when under the age of puberty. As it scarcely ever attacks any persons but such as have not yet arrived at that age, there is almost a certain prospect of its being cured at that period, although it is, in general, easily removed before that time by proper management. It is sometimes, however, an obstinate disease; and instances occasionally occur where the morbid gesticulations continue during life.

The cure may be begun by giving an emetic of ipecacuanha. Attention to food and drink is also of importance. What is said under ALIMENT, APPETITE, COSTIVENESS, DYSPEPSIA, &c., will require much attention. The compound pills of iron may be also advantageously given: see IRON; so also may the Peruvian bark, with wine, beef-tea, &c. according to circumstances. See EPILEPSY.

If the disease prove troublesome and obstinate, a medical practitioner should be consulted.

SAL, the Latin term for salt.

SAL AMMONIAC, or MURIATE of AMMONIA, a white concrete salt, consisting of ammonia and muriatic acid. It is inodorous; has a salt, bitterish, acrid, cool taste; and very slightly attracts moisture from the air; its specific gravity is 1,450. It was formerly imported from Egypt, but is now abundantly prepared on the continent, and in this country; an inferior sort is also imported from the East Indies.

It may be produced directly by mixing equal volumes of ammonia and muriatic acid, when an entire condensation ensues. When obtained by evaporation from its solution in water, it forms octoedral, prismatic, and plumose crystals; but, in commerce, it usually occurs as procured by sublimation, in white cakes, hard, and somewhat elastic; and in this compact state it requires, for solution, 3,25 parts of water at 60°. When heated, it sublimes without decomposition, in the form of white vapour.

Muriate of ammonia is prepared in this country, from either horn, feathers, wool, soot, bones, blood, or putrid urine. But the most common articles used for this purpose are horns, bones, and soot. These are generally submitted to the action of the sulphuric acid; a sulphate of ammonia is formed, and, by the addition of muriate of soda, or common salt, a double decomposition is effected, muriate of ammonia, and sulphate of soda being formed; the latter is crystallized, and the former is sublimed, so as to form the cakes mentioned above, or sal ammoniac. The most profitable process, however, of making this article, is in very few hands. The following is said to be a very good method:

Distil bones (chopped into small pieces, and boiled to extract the marrow and fat,) in an iron cylindrical still, into a leaden receiver, cooled by a refrigeratory, which is its cover, and contains four inches in depth of water. Six parts of impure alkaline liquor, and five of fœtid oil are thus obtained; the oil is to be skimmed off, and the alkali mixed with powdered gypsum. By double decomposition, sulphate of ammonia, and carbonate of lime are formed; the liquor containing the former is then to be mixed with common salt, and thus another double decomposition takes place. The solution is to be clarified by subsidence and decantation, and, by a skilfully managed evaporation in leaden boilers, the two salts are separated as they crystallize. The water of crystallization is driven off from the muriate of ammonia, by exposing it to heat in an oven; and the spongy, friable, ash-coloured mass into which it is changed, is to be put into globular bottles, or glazed earthen jars, furnished with a moveable perforated cover, in which the muriate, must be sublimed by exposing them to a heat of 320° in iron pots, filled with sand. The cakes of salt are afterwards placed for a day or two in a damp atmosphere, to soften their surface, and facilitate the removal of any superficial impurities.

Soot of coal is used in Scotland, instead of bones, for this purpose; and there can be no doubt that ingenious persons will adopt methods to convert the ammoniacal liquor obtained from the distillation of coal gas, into sal ammoniac.

The uses of sal ammoniac are considerable. Besides being employed in chemistry, as the substance from which pure and carbonated ammonia are procured, it is used in substance by the dyer, the refiner of gold, the coppersmith, and the manufacturer of tinplate.

As a medicine it is scarcely ever ordered internally, although it acts as a diaphoretic, diuretic, purgative, or emetic, according to the mode of exhibition, or the dose. Externally it is advantageously employed, on account of the cold produced during its solution in water, to abate the pain and heat of inflammation, and to allay violent headach; also in cases of mania, plethora, apoplexy, and injuries of the head; and to assist the reduction of the tumours arising from ruptures. It is also an useful application in the dropsy of the thyroid gland. It is also an excellent discutient when dissolved in the proportion of one ounce of the salt in nine fluidounces of water, with one fluidounce of rectified spirit of wine, in indolent tumours, gangrene, itch, and chilblains; and as a gargle it is occasionally useful in sore-throat.

For Volatile Sal Ammoniac, and Spirit of Sal Ammoniac, or Liquor of Ammonia, or Water of Ammonia, see AMMONIA. See also SPIRIT.

SAL PRUNELLA is merely saltpetre melted by the aid of a strong fire, and run into moulds. It is in no respect superior to salt-petre; in some, perhaps, inferior. See NITRATE OF POTASH.

Sal Volatile. See AMMONIA.

SALAD, a dish of raw or fresh esculents. We have mentioned the qualities of salads, for the most part, under their respective heads. There can be no doubt of their suitableness to the human constitution when eaten in moderate quantity: but we cannot speak so highly of them as some medical writers would induce us to believe. Of all the salads the lettuce is perhaps the best. See LETTUCE, MUSTARD, RADISH, &c. &c.

Salad, the corn. See CORN SALAD and VALERIAN.

Salamander. See LIZARD.

SALEP, SALOP, or SALOOP, the root of the *Orchis morio*, growing in Turkey and other eastern countries. See ORCHIS.

Salep root is brought to this country in oval pieces, of a yellowish white colour, somewhat clear and pellucid, very hard, and almost horny; of little or no smell, in taste like gum tragacanth. It is not easily pulverized. The powder, dissolved in boiling water, forms a wholesome and nutricious jelly, consisting, doubtless, chiefly of mucilage and starch. It forms a considerable part of the diet of the inhabitants of Turkey, Persia, and Syria, and is thought superior to rice. Its demulcent and mucilaginous qualities render it of use in various diseases when employed as aliment; particularly in sea-scurvy, diarrhœa, dysentery, hectic fever arising from the absorption of pus, the stone and gravel, &c.

It is said that salep root may be prepared from many of the *orchis* species growing in this country. The following is said to be the best method; the root should be gathered when the seed is formed, and the stalk about to decay. After separating them from the stalks, washing them in water, and removing the exterior thin skin, they should be placed on a tin plate, in an oven previously heated to the degree requisite for baking bread. In about ten minutes they will acquire the transparency of horn; they should be then spread in a room where they may dry and harden in a few days; or the same object may be obtained by a moderate heat in a few hours.

SALINE DRAUGHT, a draught composed of saline ingredients. The most common saline draught is composed of sub-carbonate of potash and lemon-juice. See POTASH and LEMON-JUICE.

SALIVA, the fluid which is secreted by the salivary glands into the cavity of the mouth: these glands are, the parotid, the sub-maxillary, and sub-lingual. The saliva is continually swallowed, with or without masticated food: some persons, not the most cleanly nor healthy, frequently spit it out. It has no colour nor smell; in health it is tasteless, although it contains a small portion of salt, to which the tongue is accustomed. Its specific gravity is somewhat greater than water. Its consistence is rather adhesive, and it is frothy from an admixture of air. It consists of water 80 parts, coagulated albumen 8 parts, mucus 11 parts, saline substances 1 part. It is copiously coagulable by the action of galvanic electricity. The uses of the saliva are, to augment the taste of the food; to mix with, and dissolve the food, and render it fit for the process of digestion; and to keep the mouth continually moist, so as to prevent or moderate thirst. It has been supposed that the quantity of twelve pounds of saliva is secreted in twelve hours; but we think this is beyond the truth.

SALIVATION, or PTYALISM, in medicine, a promoting the flux of saliva, by means of medicines, mostly by mercury. The chief use of salivation is in diseases belonging to the glands, and adipose membrane; and principally in the cure of syphilis; it is sometimes also beneficial in epidemic and cutaneous diseases, &c. when they evince a disposition to terminate by means of such evacuation.

Salivation, from the use of mercury, is sometimes induced without design. In such cases the only remedy is to keep the body moderately warm, not hot, and to take plentiful doses of flowers or milk of sulphur, in order to keep the bowels lax, and at the same time to counteract the salival effects of the mercury, for which sulphur is the best medicine.

SALLENDERS, in farriery, the same disease as mallenders, occurring only in a different situation, that is, the bend of the hock. See MALLENDERS.

Sallow. See WILLOW.

SALMON, or *Salmo*, a genus of fishes comprising fifty-five species, inhabitants of the seas of Europe or America; one or two inhabitants of the Nile; ten or twelve common to the waters of our own country. Most of the fishes of this family are found in rapid stony rivers, and are impatient of foul water, although from the abundance of their food, frequently found in such water, they are often caught in it. What that food is, is not, however, as far as relates to the *salar*, the chief of the tribe, with certainty known. Although in our books of natural history they are said to feed on fishes, worms, and insects. A few of this tribe inhabit the sea, but get into rivers for the purpose of depositing their spawn in beds of gravel; for this purpose they will surmount great difficulties, ascend many hundred miles up, force themselves against the most rapid streams, and spring with amazing agility over any thing which happens to impede them, to the height of seven or eight feet: after spawning, they return to the sea poor and lean. They are subdivided into, body variegated;—dorsal and anal fins opposite;—teeth hardly visible, or none. The following are the chief:

The *Salar*, or Common salmon, is too

well known to need description; its red flesh a distinguishing characteristic. Inhabits chiefly the northern seas, and ascends rivers annually in large shoals for the purpose of spawning. Grows rapidly, and sometimes reaches, though rarely, six feet long; more commonly from two to three feet, weighs from three or four to sixty pounds. It is found over all the North of Europe and Asia, from Britain to Kamschatka; but does not venture into the warm or intratropical latitudes. It is an ocean fish, and, therefore, is only found in those rivers and lakes which communicate with the sea. It is said to attain its full growth when six years old. The salmon fisheries on the various coasts of these kingdoms, furnish employment to numerous persons, and are a valuable resource. It is caught in various ways, by hook and line, nets, &c.

Of this fish, as food, we cannot speak greatly in commendation, although there can be no doubt that for the robust it furnishes considerable nutrition. The dyspeptic should avoid it, and more especially its oleous parts.

The *Trutta*, Salmon trout, Bull trout, or Sea trout; body with black spots encircled with brown; another variety, called, in Cumberland, white trout. This species is larger than the common trout, and differs from it in habits and colour as well as size. It annually migrates, like salmon, from the sea; weighs sometimes three pounds; flesh good. The white trout seldom exceeds a foot in length; migrates out of the sea into the Esk in Cumberland.

The *Fario*, Trout, or River Trout, has the body with purple red spots; another variety, brown with violet spots, the sides whitish yellow with red spots, surrounded with white, and a brown area, beneath white. This fish is universally known in this country; size from half a pound to two or three pounds; but there are trouts taken in Ireland and in Cumberland which weigh thirty pounds; these are, however, inferior as food to the smaller kind. It feeds not only on worms, marine insects, and other fishes, but even on its own tribe; from its voracity it is easily caught by the angler.

The *Alpinus*, or Charr, has the back black, sides pale blue, belly orange; found in the lakes of the high and mountainous parts of Europe; in Westmoreland, Wales, and Scotland. Several varieties: the red, the gilt, and the case charr. They are taken in nets, or trammels, which are furnished with bait; flesh good.

The *Laveretus*, or Gwiniad, has the Upper jaw longer; dorsal fin, fourteen rayed; another variety, called *lavaret*. This species seems to constitute an intermediate tribe between the trout and the herring; like that, it suddenly dies when taken out of the water; length about a foot, inhabits like the charr; gregarious; flesh insipid.

The *Eriox*, Sewen, or Grey salmon, has the body with cinereous spots; inhabits the European seas, and is found in our own; much less than the salmon; flesh paler, and, as food, more delicate.

The *Eperianus*, or Smelt, inhabits the shores of Europe, and ascends rivers in the spawning season; very prolific; feeds on worms and testaceous animals; has a peculiar smell, is sub-diaphanous, shining; body above cinereous; sides silvery green and blue; beneath reddish white; from three to thirteen inches long; the largest have the faintest smell; flesh good.

The *Thymallus*, or Grayling, has the upper jaw longer; dorsal rays twenty-three, body above silvery grey, varied with blue; beneath white; flesh excellent; two feet long; inhabits Europe and Siberia, in clear and rapid mountain streams.

Salsola. See KALI.

SALT, a generic term applied to a great variety of very different substances. These substances generally possess what we commonly call a salt taste, that is, such a taste as common salt imparts when dissolving in the mouth. The taste, however, as well as external appearance of salts vary exceedingly, so that it is not easy to define exactly what we mean by the general term salt. Besides taste, solubility in water, is a quality which belongs to most salts; this solubility is very different in different salts; some dissolve in water in large proportions, others very sparingly.

Salts may be arranged under three heads, viz. *acid*, *alkaline*, and *metallic* salts. *Cream of tartar*, *oxalic acid*, &c. are examples of the first, the *carbonates of soda*, *potash*, and *ammonia*, of the second; the *sulphates of iron*, *copper*, *and zinc* of the third. A great portion of the known salts are called *neutral salts*, from their being generally formed of one acid and some base, and having very different properties from either of the substances of which they are composed; they form the most valuable and useful class of saline bodies. *Nitrate of potash*, nitre, or saltpetre, and *common salt*, muriate of soda, or, by the most recent and correct nomenclature, *chloride of sodium*, are examples of these. As the term *salt*, in the common language of life, usually implies this last article, we shall here confine ourselves to an exposition of its most striking properties and uses, and refer the reader for all the other salts, to the different heads in the order of the alphabet.

COMMON SALT, *muriate of soda*, or *chloride of sodium*. Sodium when heated in chlorine, burns, and produces a white compound, of a pure saline flavour, soluble in 2½ parts of water, at 60°, and forming cubic crystals. It has all the properties of common salt, and consists of 33,5 parts of chlorine, and 22 parts of sodium. See SODA, and SODIUM.

Common salt, however, exists abundantly in nature, both as a fossil, and dissolved in water. Immense masses of it are found in Cheshire, where it is known under the name of *rock-salt*. The celebrated salt-mines at Cracow, in Poland, furnish abundance of the same article. It is also found in Africa, Asia, and America, forming hills, or very extensive beds above the surface. It is also found in various springs in this country, and elsewhere. See BRINE. It is also obtained in large quantities by evaporation from the water of the ocean. According as it is produced from these sources, it is named bay, or sea-salt, and rock-salt. See BAY-SALT,

Rock-salt is solid, hard, and more or less transparent; of a white, grey, or reddish colour, sometimes of a bright or deep red, or yellow, and more rarely with spots of blue. Its fracture is foliated, or fibrous; it is generally massive, but sometimes crystallized in cubes; its fragments are always of a cubical form. It is always connected with rocks of secondary formation, and generally with sulphate of lime.

The principal sources of the salt manufactured in this country, are rock-salt, brine-springs, or the sea. The first material is confined entirely, and the second chiefly, though not wholly, to a particular district of Cheshire. Of the extent and boundaries of this district, the process of manufacture, and other interesting circumstances, an ample history is given in Mr. HOLLAND's *Agricultural report of the County of Chester*. It appears by this report, that in making the *stoved* or *lump-salt*, the brine is brought to a boiling heat, which in brine fully saturated, is 226° of Fahrenheit. This temperature is continued during the whole process; as the evaporation proceeds, small flaky crystals are formed, and fall to the bottom of the boiler. At the end of from eight to twelve hours, the greatest part of the water of solution is found to be evaporated; so much only being left as barely to cover the salt, and the bottom of the pan. The salt is then removed into conical wicker baskets; and, after being well drained, is dried in stoves. During this process, carbonate of lime and a small portion of oxide of iron, and occasionally sulphate of lime, are separated from the liquor; and are either removed by skimming, or allowed to subside to the bottom of the pan. Some of the impurities, however, adhere so closely to it, as to form a solid incrustation, which requires to be removed occasionally by a pick-axe.

In preparing *common salt*, the brine is first raised to a boiling heat, in order to bring it as quickly as possible to the point of saturation, and to clear it of its earthy contents. The fires are then slackened, and the evaporation carried on for 24 hours, with the brine heated to 160° or 170° of Fahrenheit. The remainder of the process it similar to that for stoved salt.

The *large-grained flakey salt* is made also by evaporation, but conducted with a heat only of 130° or 140°. The salt thus formed, is somewhat harder than common salt, and the crystals approach more nearly to the cubic shape. *Large-grained*, or *fishing salt*, is prepared from brine heated only to 100, or 110° of Fahrenheit, by which larger crystals are still formed.

For ordinary or domestic uses, stoved salt is quite sufficient; this salt is adapted to the salting of provisions, not intended for sea voyages, or warm climates. For the latter purposes, the large-grained or fishing salt, is peculiarly fitted. But St. Ubes, Cadiz, and other foreign salts are still preferred for salting fish; see HERRING. This is, however, perhaps a mere prejudice.

On the eastern and western shores of Scotland, large quantities of salt are made by the evaporation of sea-water. The process is there carried on entirely by artificial heat, at the temperature of the boiling point. This salt approaches most nearly to the character of stoved salt, mentioned above. The salt called *Sunday* salt, in consequence of the slacking of the fires on that day, is in much larger crystals. At Lymington, in Hampshire, advantage is taken of the greater heat of the climate, to concentrate the sea water by spontaneous evaporation, to about one-sixth of its bulk, before admitting it into the boilers. One kind of salt is chiefly prepared there, which most resembles the stoved-salt of Cheshire. But the process varies a little from that above described. The water is entirely evaporated, and the whole mass of salt taken out at once, every eight hours, and removed into troughs with holes in the bottom. Through these it drains into pits made under ground, which receive the liquor called bittern. Under the troughs, and in a line with the holes, are fixed upright stakes, on which a portion of the salt crystallizes, and forms in the course of ten or twelve days, on each stake, a mass of sixty or eighty pounds. These lumps are called salt-cats.

From the mother liquor, or bittern, sulphate of magnesia, or Epsom-salt is made, during the winter season, when the manufacture of salt is suspended in consequence of the absence of the heat required for the spontaneous evaporation of the water. The process is a very simple one, and said to be performed thus: The bittern liquor from the pits is boiled some hours in the pans used in summer, to prepare common salt; the impurities, which rise to the surface, are removed by skimming; during the evaporation, a portion of impure common salt separates. The bitter liquor is then removed into wooden coolers, 8 feet long, 5 feet wide, and one foot deep. In these it remains twenty-four hours, during which time, if the weather be cold and clear, the sulphate of magnesia crystallizes at the bottom of the coolers.

After being drained in buckets, this is termed single Epsom salts; after a solution in water, and second crystallization, it is called double Epsom salts. Four or five tons of this article are obtained from a quantity of brine which has produced 100 tons of common, and 1 ton of cat-salt.

The bittern consists chiefly of muriate of magnesia, muriate of lime, some common salt, and a small portion of sulphate of lime; and, therefore, it its probable that the sulphate of magnesia is obtained by decomposing the muriates, by means of sulphate of iron, or sulphuric acid in some form; although some affirm, that the bittern is only boiled down to a high point of concentration, when the sulphate of magnesia forms. The art is, of course, in very few hands, and is not, in the large way, publicly known, further than as above stated.

The following comparative table will shew at once, the component parts of foreign and British varieties of salt.

1000 Parts by weight of

KIND OF SALT.		Insoluble matter	Muriate of Lime.	Muriate of Magnesia	Total Earthy Muriates.	Sulph. of Lime	Sulph. of Magnesia.	Total Sulphates.	Total Impurities	Pure muriate of Soda.
Bay salt	St. Ube's contain of	9	a trace	3	3	23½	4½	28	40	960
	St. Martin's	12	....	3½	3½	19	6	25	40½	959½
	Oleron	10	....	2	2	19½	4¼	23¾	35¾	964¼
British salt from Salt water.	Scotch (common)	4	....	28 or +	28 or +	15	17½	32½	64½	935½
	Ditto (Sunday)	1	....	11½	11½	12	4½	16½	29	971
	Lymington (com.)	2	....	11	11 or +	15	35	50	63	937
	Ditto (cat)	1	....	5	5	1	5	6	12	988
Cheshire	Crushed rock-salt	10	0 1/16	0 3/16	0¼	6½	...	6½	16¾	983¼
	Fishery	1	0¼	0¼	1	11¼	...	11¼	13½	986¾
	Common	1	0¼	0¾	1	14½	..	14½	16½	983½
	Stoved	1	0¼	0¾	1	15½	...	15½	17½	982½

Muriate of soda is inodorous; its taste is strictly salt, and when pure it is perfectly devoid of bitterness. When in regular cubes, it is but little affected by exposure to the atmosphere; when it deliquesces, it contains some earthy muriate. Its crystals decrepitate when heated; and in a red-heat it is fusible without undergoing decomposition; on cooling it concretes into a hard white mass, having lost about two per cent. of its weight; in a still greater heat, it is volatilized in undecomposed white fumes. Its specific gravity is 2,126. It is equally soluble in cold and in hot water. Its solution in water produces cold. See FREEZING MIXTURES. It is decomposed by both sulphuric and nitric acid. See GLAUBER'S SALT.

Upon a most careful examination of different specimens of common salt, it appears by Dr. HENRY's Analysis, published in the Philosophical Transactions for 1810, that the chief, if not the only cause of the difference in the qualities of both foreign and domestic salts is, in the size and compactness of the crystals. That that kind of salt which possesses most eminently the combined properties of hardness, compactness, and perfection of crystals, is best adapted for the purpose of preserving fish, and other provision; and merely so because it will remain permanently between the different layers, or will be very gradually dissolved by the fluids that exude from the provisions; thus furnishing a slow but constant supply of saturated brine. But, for preparing pickles, and other common purposes, the small-grained salt answers equally well, or perhaps, on account of its ready solubility, even better.

Although a prejudice exists in favour of *Bay-salt*, as it is called, for the purpose of salting fish, &c. yet we have reason to know, that the greater part of what is sold for bay-salt in this country, is an English manufacture, often tinged with umber, or some such colouring material.

Salt is of most extensive use as a preservative of food, as a condiment, and in various processes in the arts. GLAUBER first obtained muriatic acid from it; the existence of soda in it was shewn by DUHAMEL. Its real nature was first demonstated by Sir HUMPHRY DAVY.

Salt has also been lately strongly recommended for fattening cattle (see OX) and also as a manure. In order to encourage the use of it for this purpose, An act of parliament has been lately passed reducing the duty on rock-salt for *agricultural purposes*, so that it may be now obtained in Liverpool of Messrs. Horne and Stackhouse, at six pounds per ton, duty included. The duty upon common salt for other purposes, except for exportation, making mineral alkali for glass, for bleaching, or for curing fish, is *thirty pounds* per ton. In the year 1817, the quantity of salt for which duty was paid was 1,939,674 bushels, each bushel being 56lbs. The quantity exported was 6,338,601 bushels. And for making mineral alkali for glass, 3372 bushels. For bleaching, 3372 bushels. For the fisheries, 1,044,365 bushels, making a grand total of 9,357,482 bushels. The net annual revenue of the same year, from salt, was 1,358,494l.

Any farmer requiring rock-salt for agricultural purposes, (and no other salt but rock-salt can be obtained for such purposes at the reduced duty) must procure from the nearest excise officer, a certificate that he is an occupier of land. This paper will authorize and enable him to receive the salt, any part of which he may transfer to another farmer by a permit, with which the excise officer will furnish him. This permission to buy salt at the low duty, and to use it in farming, requires neither bond nor affidavit, those being done away by the late act. Any proprietor of rock-salt at Nortwich in Cheshire, will furnish the salt, when applied to; or it may be obtained more quickly as above, at Liverpool. The excise certificate must accompany the order for the salt.

That salt is a valuable manure, the testimonies are too numerous to doubt; it not only operates as a manure to arable land, when sown in powder, from thirty to forty bushels per acre in autumn, before the land is ploughed, and afterwards thoroughly incorporated with the soil by ploughing; but it may be used in promoting the fertility of waste land; it is an effectual remedy against the smut; it preserves the vegetation of oily seeds; it increases the produce of pasture land and meadows, being spread upon the surface in the month of October, in the proportion of from eight to sixteen bushels per acre; it improves the quality of hay, being sprinkled upon it, at the rate of twenty-five poundsof salt to a ton of hay, when in the act of putting together: preventing mildew, and rendering the hay more grateful to cattle; it also renders coarse food more nourishing, and moist food less injurious to cattle and horses; it preserves live stock generally from disease, and improves their condition; and it has a tendency to prevent the rust or blight in wheat. For farther particulars see **Parkes** *on the Advantage of using salt in Agriculture*, **Sinclair's** *Code of Agriculture*, and **Dickson's** *Agriculture*.

Rock-salt, as a manure, should always be used in fine powder.

Muriate of soda, as a condiment, appears to be essential to the human constitution: although, when taken in immoderate quantity, it has the singular property of producing thirst. As a medicine, and given in moderate doses, it is tonic and anthelmintic; in larger doses purgative; and externally stimulant. In the ordinary mode of using it, there can be little doubt of its being useful in the process of digestion; and sometimes, when taken more freely, it proves useful in dyspepsia and worms. In large doses, it is said to check vomiting of blood; and it may be used as a purgative, although it is not often employed as such. Dissolved in a pint of luke-warm water, in the proportion of from half an ounce to an ounce, it forms a common domestic clyster. It is used also, dissolved in water, as a fomentation to sprains and bruises: and dissolved in a large portion of water, it forms the best stimulant, general bath: whether used cold, tepid, or in a hot state.

Its dose as a tonic, &c. is from ten grains to one scruple; as a purge, from half an ounce to an ounce. It should be largely diluted.

Salt of Amber. See **Amber.**

Salt, Bay. See the preceding article, and **Bay-salt.**

Salt of Hartshorn. See AMMONIA, and HARTSHORN.

Salt of Tartar. See POTASH.

Salt of Wormwood. See POTASH.

Saltpetre. See NITRATE of POTASH.

Salt-wort. See KALI, and KELP.

SALT-WORT, the BLACK, SEA MILKWORT, or *Glaux maritima*, a genus of one species only, common on the sea-coast. It is a beautiful little plant, succulent and salt to the taste, and used occasionally as a pickle.

Salve. See OINTMENT.

SAMPIRE, or *crithmum maritimum*, is a species of the genus CRITHMUM, of which there are only two. The sampire is common to the sea-cliffs of our own country; it is a low perennial plant, has a spicy aromatic flavour, and when pickled with vinegar and spice, is esteemed an elegant condiment; but we can scarcely speak of any pickles with commendation. The *latifolium* is a Teneriffe plant.

SAND, or *Arena*, in mineralogy, a genus of which eight species have been described: *Siliceous sand*, composed of fragments of flint; found in Buckinghamshire, and other places. *Gravel*, found every where on barren rocky mountains; it is produced by granite, which has mouldered from exposure to air; and is frequently found mixed with mica, feldspar, and argil; principally used for gravel walks. *Micaceous*, shining with numerous, interspersed, small scales of mica, resembling thin plates of gold or silver, in colour and lustre; used to dry up recent writing; found in Sweden, Germany, and the island of Cassarita. *Common sand*, found every where in Europe, chiefly upon the sea shores; contains various substances, fragments of sea shells, quartz, &c.; colour variable. *Coloured sand*, in rounded, minute, transparent grains, tinged with oxide of iron; found in South America and Europe, chiefly on the shores of lakes; colour yellow, yellowish, testaceous, rarely red; violet in the Baltic, near Germany. Used for sprinkling over letters, makes admirable walks. *Dust sand*, in very minute grains, mixed with pulverized alumina; found on barren commons and heaths; chiefly used for moulds and beds for casting metals. *Hour-glass sand*, in larger unequal, round, transparent, whitish grains; found on barren heaths, &c. and chiefly used for hour-glasses. *Quick-sand* is in very minute, round, transparent, white grains; found in the sea, and adjacent wastes; when dry, blown about by the winds, and collected into sand-banks, and often taken up in masses by whirlwinds, overwhelming and suffocating travellers, and even whole villages. It is kept compact by the roots of several plants, chiefly of the *agrostis*, or bent tribe.

Sand is of great use in the manufacture of glass, no doubt, in consequence of its containing a large portion of flint. See GLASS. Some kinds of sand being mixed with lime, make good mortar. See MORTAR. Sand is also a very useful manure for all kinds of clay lands.

SAND BOX TREE, or *Hura*, a genus consisting of one species only, a West Indian tree, with branches abounding in a milky juice, and rising about twenty-five feet high; its pods burst, when ripe, with violence, and scatter their seeds to a considerable distance.

SAND-CRACK, in farriery, a perpendicular fissure, or crack, on the side of the horse's hoof. The shoe being removed, the extent of the crack is to be carefully examined; if it be superficial, the crack may be filled with the following composition, keeping the foot cool and moist: bees wax four ounces; yellow resin two ounces; common turpentine one ounce; tallow or suet half an ounce. Melt them together. If the crack has extended to the sensible parts, there will be generally some fungous flesh. In this case, the cracked horn is to be carefully removed with a small drawing knife; some caustic is then to be applied to the fungus, the reproduction of which must be prevented by binding on it firmly a pledget, or roll of lint or tow, dipped in tar, or tar-ointment, which must be continued till the fungus is destroyed. The whole foot must be kept moist with a bran poultice for a few days, or until it has become cool, and the lameness is removed. A bar shoe is then to be applied so as not to bear on the diseased quarter. The shoe must be hollowed in the part opposite to the seat of the disease, so that no pressure may be made on that part of the foot. See CORNS. When this has been done, the pledget of tow should be removed, the crack filled with the composition, and the horse turned to grass in some soft meadow.

Sand-eel. See LAUNCE.

SAND-FLOOD, or SAND-DRIFTS, are incident to the lands of Suffolk, and some other parts of England; although such floods are not often so mischievous in this country as in some other quarters of the globe, yet, they are occasionally exceedingly injurious. The best remedy is the planting of bent, and other plants, having long and fibrous roots, in the sand, which most effectually retain it in its place. The 15th Geo. II. c. 33, prohibits the destruction of bent or star, when used for such purposes. See BENT and REED.

Sand-piper. See LAPWING.

SAND-STONE, or *Arenarius*, a genus of stones, consisting of grains of sand cemented together. It occurs in stratified mountains, and forms entire strata, rocks, hills, or mountains, generally of a common form, and breaking into indeterminate fragments. Between thirty and forty species have been described. The following are the chief:

Red sand-stone is very abundant in England, especially in Lancashire, Cheshire, Staffordshire, Shropshire, and Worcestershire. Rocks of this stone are seen in some parts of Britain, in great beauty and perfection, especially where they occur on the coast, or are intersected by rivers. At Ilfracombe, the red sand-stone of the Devonshire coast is seen lying upon slate. Hawthornden, near Edinburgh, shews the characteristic features of the rock. In the lowest sand-stone formation, we meet with a variety of bodies of the utmost importance in the arts and manufactures.

Elastic sand-stone is elastic, hard, apyrous, and in somewhat scaly particles; it is of a hoary colour; it may be easily bent backwards or forwards, when it returns to its former position; found in Brazil. *Avanturine* is hard, and takes a fine shining polish; it consists of tawny grains, unequally tinged; found in Britain, Spain, Bohemia, and Saxony.

The *Grind-stone*, or Siliceous sand-stone, is hardish, brittle, does not take a polish; it consists of lesser unequal grains; of a rufous, yellowish white, or grey colour; sometimes mixed with particles of mica, or containing vestiges of shells; found in Britain, and various parts of Europe: it is chiefly used for grind-stones, scythe-stones, and buildings, and supposed to produce consumption in those who inhale its fine dusty particles.

Filtering-stone is hard, filtering water; it consists of large unequal grains; it is generally grey, with pellucid angles; found in the Canaries, Saxony, Bohemia, and on the shores of New Spain; its chief use is to render salt waters sweet, or turbid ones clear.

There are several species of sand-stone to which no English name has been given: one hardish, consisting of unequal, angular, opaque, large grains; it is rather solid, and of a white, grey, greenish, brown, red, or yellowish colour; found in Britain. Another kind is hardish, and consists of lesser grains, agglutinated by a cement of marl; colour grey, yellowish, or reddish; found in Britain, Germany, Sweden, France, &c. Under ground it is moist, and easily cut, but hardens when exposed to the air. It is chiefly used in architecture. Another consists of grains agglutinated by porcelain clay; found in coal pits in Norway. Another separable into tables, or plates, and varying much in size and transparency of its grains, thickness of the plates, and colour, but generally white, or reddish; found in Britain, Sweden, Spain, Germany, &c.; some of it may be used for tiling. Another is hard, consisting of grains agglutinated by a cement of a small quantity of oxide of iron; it is of a red or yellow colour; found in Sweden and Germany.

Ferruginous sand-stone consists of grains conglutinated with a larger portion of oxide of iron; it is brownish yellow, and frequently impressed with the casts of shells; sometimes so rich in iron ore, as to be worked with advantage.

The *Undulate stone*, or Whetstone, consists of smaller grains mixed with mica, its colour is reddish, yellowish, rufous, the mica white or black, disposed longitudinally, in dots; found in layers every where, in mountains and hills of sand.

The *Mill-stone* is hard, consisting of unequal angular grains of quartz and feldspar, interspersed with mica; sometimes with garnets, or crystallized schorl: found generally throughout Europe; it is of a very hard texture, and used for corn mills; the grains of quartz are transparent, generally white, and larger, the feldspar less, more opake, and grey.

Tiger-stone is white, in small grains, with ferruginous perforations; it filters water.

SAND-WASP, or *Ammophila*, a genus of insects, consisting of four species, formerly arranged under the genus SPHEX, or Savage, see SAVAGE; they are as follow: the *vulgaris*, the *affinis*, the *hirsuta*, and the *argentea*; they are all inhabitants of Europe. The first frequents sandy sunny banks, where it digs a hole with its fore feet, and buries the carcase or the larva of a moth, or a half-dead spider, in the body of which it deposits its eggs, and then covers up the orifice.

Sandal-wood, See SANDERS.

Sandarack. See JUNIPER.

Sanderling. See LAPWING and PLOVER.

SANDERS, the RED, or *Pterocarpus santalinus*, a species of the genus PTEROCARPUS, of which seven have been observed, the chief of which are as follow:

The *Draco*, or Dragon's blood-tree, having a solid white wood, and growing to the height of thirty feet; the bark, when cut transversely, yields a blood-red resin, which is said by some to be the dragon's blood of the shops; this is, however, doubtful; see DRAGON'S BLOOD: it is a native of the West Indies. The *marsupium* having an orange-coloured wood, and white flowers, is a native of Coromandel. The *santalinus*, the first-named species, is a lofty tree, having a deep red wood; the leaves are ternate, ovate, retuse, glabrous; the corolla is yellow, with red veins; it is a native of the mountains of India, particularly the Onore district, and of Ceylon. The wood is brought home in billets, which are very heavy, and sink in water; it has an aromatic odour, but is nearly insipid; is extremely hard, of a fine grain, and of a bright garnet colour. It yields its colour to ether and alcohol, but not to water. It is of no medicinal use, but merely as a colouring ingredient. There is reason for suspecting that several red woods, capable of communicating a red colour to spirituous liquors, are sold as red sanders.

SANDERS, the YELLOW, SANDAL-WOOD, or *Santalum*, a genus consisting of one species only, the *album*, an Indian tree, with opposite, lanceolate, entire leaves, and small red flowers, in terminal racemes. In height it equals the walnut: it is burnt in small billets in India, on account of the fragrant smell which it diffuses. The outer part of the wood is white, the interior yellow: hence the origin of the terms white and yellow sanders: the white sanders is most abundant and cheapest. Its medicinal virtues are very trifling.

SANDEVER, or SANDIVER, a kind of whitish salt that is separated from the surface of glass, during its manufacture, and while in a state of fusion. It is of a pungent, corrosive taste, and is employed by some farriers for the purpose of cleansing horses' eyes. It is, however, a doubtful remedy.

SANICLE, or *Sanicula*, a genus of plants, consisting of three species, two indigenous to Virginia and Maryland; one to Europe, and found wild in our own woods, with root-leaves simple, and all the florets sessile. None of these are of any importance either medicinally or otherwise.

Sanicle, Yorkshire. See BUTTERWORT.

SANIES, ichor. It is sometimes applied to a thin, limpid, and greenish discharge; at other times to a thick and bloody kind of pus.

SAP, the fluid found in the vessels of plants.

Sap has a motion in the vessels, and appears to rise from the roots in a series of tubes in the alburnum; it then circulates in the leaves; becomes changed considerably in composition, and enters the vessels of the inner bark, enabling it to produce a new layer of wood, and to form the peculiar secretions which belong to it, and which, in smaller quantity, are also found in other parts of vegetables.

The cause of the motion of sap has never been satisfactorily accounted for, though it is, perhaps, principally referable to the contraction and expansion produced by changes of temperature.

That the sap ascendsin the *alburnum*, and descends in the *liber*, or inner bark, is shewn by making incisions into the former and latter. The wound of the one will exude upon its lower surface, and of the other from its upper surface; and if a circular strip of bark be removed from a small branch of a tree near the stem, there will, of course, be an accumulation of sap in that branch, and its produce of leaves, flowers, and fruit, is often remarkably increased by such an operation. If, on the contrary, the alburnum of a branch be completely divided, it dies, as nourishment from the earth is then excluded. See BIRCH, MAPLE, &c.

The term sap, or sapwood, is also applied to the alburnous part of trees.

Sap-green. See COLOUR-MAKING.

Sapajou. See MONKEY.

SAPOTA, or *Achras sapata*, is a species of the genus of ACHRAS, of which only three are known; one has been traced in the Friendly Islands, the two others in South America. The first, or Oval-fruited sapota, has a fruit like an apple, which when ripe is of a luscious taste, resembling that of marmalade of quinces; the seeds have been sometimes given in form of an emulsion, in calculous complaints; it is a native of South America.

SAPPHIRE, a species of gem of a bright blue colour. See CORUNDUM, and GEM.

SARCOCELE is a disease, or scirrhous state of the testicle, in which it appears fleshy, enlarged, and firmer and harder to the touch than in any other disease to which the testicles or the scrotum are liable. If the disease has subsisted for a long time without considerably increasing in size, and as long as the part is only hard and free from the formation of matter, we may expect a favourable result; but when collections of matter have already formed, either in the substance, or upon the surface of the testicle, extirpation is the only remedy. This disease will, in every stage, require the attention of an experienced surgeon.

SARCOCOLLA, a concrete gum-resinous juice, supposed to be the produce of the *penæa mucronata*; it is brought from Persia and Arabia in small grains, of a pale yellow colour, mixed with some also of a deep red. It has been chiefly used for external purposes, and was formerly in the materia medica, but is of trifling efficacy.

SARCOMA, a fleshy excrescence. Sarcomatous tumours are found in various parts of the body; they are usually scirrhous, and sometimes degenerate into cancer. They require extirpation by the experienced surgeon.

Sardonyx. See CHALCEDONY.

SARPLAR of WOOL, a quantity of wool, otherwise called a pocket or half sack; a sack containing 80 tods; a tod two stones; and a stone 14 pounds. In Scotland it is called sarpliath, and contains 80 stone.

SARSAPARILLA, the root of a species of the *smilax* See SMILAX.

SASSAFRAS, or *Laurus sassafras*, is a species of bay, a native of North America and Cochin China. It is cultivated in Jamaica; and withstands the cold of our climate, so as to be frequently cultivated as an ornamental shrub. See **Bay**. In America the plant rises to twenty or thirty feet in height, having a trunk about twelve inches in diameter, covered with a rough furrowed grey bark, and brownish towards the top; the leaves are of different shapes and sizes: oval, entire, or lobed; of a livid green colour, and downy underneath; the flowers appear in May and June, are small, in pendent panicles, and yellowish, or greenish white; the berry is oval, and when ripe of a blue colour.

Sassafras wood, root, and bark, have a fragrant odour, and a sweetish aromatic taste. Their medical qualities depend on an essential oil, which may be obtained by distilling the chips, or the bark, in water. The bark is considerably more powerful than either the wood or root. Water extracts the virtues of sassafras partially, alcohol completely.

Sassafras was formerly in considerable estimation in a variety of complaints, but it has long ceased to be considered of much efficacy by the faculty; the vulgar, however, continue to drink sassafras tea as a medicine, with only, perhaps, fancied benefit. The *oil* as a warm aromatic and stimulant, may be occasionally useful in flatulence. The dose is from two to ten drops, on sugar.

Sassafras is an ingredient in the compound decoction of sarsaparilla. See **Smilax**.

SATIN, a glossy kind of silk stuff, the warp of which is very fine, and stands out so as to cover the coarser woof. Some satins are quite plain, others wrought; some flowered with gold or silver, and others striped, &c. For cleaning and dyeing satin, &c. See **Dyeing** and **Scouring**.

Satin flower. See **Moon-wort**.

SATIN SPAR, a fibrous variety of carbonate of lime, sometimes called *inolith*. It is found near Alston, in Cumberland; its colour is white, with a rosy tinge.

SATIRE, in literature, a term which implies any kind of writing, wherein any person is reprehended; but more particularly a poem, wherein men's follies and vices are wittily exposed, in order, as the satirists pretend, to their reformation.

Of the utility of satire as a moral engine, we entertain strong doubts. It appears to us that *punning*, *parody*, *satire*, and *ridicule*, are children of the same family, and that so far from their being productive of any good, are, on the contrary, too often productive of great mischief.

The exercise of ridicule, implies in the satirist, and excites in his readers, a contemptuous feeling; that of invective implies and excites an indignant feeling; and these states of mind should not be encouraged, for nothing, perhaps, more effectually impedes the operation of the benevolent affections. Nothing is, in truth, more easy than to make keen, severe, and wounding observations; it is a talent with which mankind generally abounds; but it is a talent which should be suppressed, not encouraged. Who that is in the habit of contemplating the different productions of the public press of this country, and more especially the daily newspapers, will not be pained and grieved to perceive the heart-burnings and animosities which are constantly excited by this tremendous weapon. In a word, it has been well asked what profligate has satire ever reclaimed to virtue; what crime has it ever banished from society? Satire and all the malevolent feelings of mankind have been for a series of ages tried in vain to promote the diffusion and practice of truth, virtue, and benevolence; it is high time to adopt a kinder course, more advantageous to our happiness, and one which cannot fail to be more efficacious as a remedial moral process. See **Benevolence**, **Difference of opinion**, **Ridicule**, &c.

SATURATION, in chemistry, a term employed to express that state of a body which has a power of dissolving another to a certain extent only, in which this degree of solution is effected: thus nitric acid can only dissolve a certain quantity of lime; this degree of solution is termed the point of saturation;

and the nitric acid is then said to be saturated with lime. And so of innumerable other chemical compounds.

SATYRIASIS, the same disease in men as *nymphomania* in the female. Its causes and cure are the same as for that complaint. See NYMPHOMANIA.

Satyrion. See ORCHIS.

SATYRION, LIZARD FLOWER, or *Satyrium*, a genus, consisting of twenty-one species, natives, for the most part, of the Cape, a few of the West Indies, five or six of the south of Europe; four indigenous to our own country; the nectary consists of a roundish inflated bag behind the flower. The following are cultivated: the *hyrcinum*, Lizard satyrion, or Lizard-flower, with undivided bulbs, and lanceolate leaves; found in our pastures, rising three feet high, and producing from twenty to sixty flowers of a fetid goat-like smell; corol, dirty white, with linear stripes and brown spots; sometimes called Goat orchis. The *viride*, or Frog satyrion, has palmate bulbs, and ovate, rather obtuse, leaves, stem from five to eleven inches high; found also in our pastures. The *albidum*, or White satyrion, has fascicled bulbs, and lanceolate leaves; stem from nine to fifteen inches high; found in our meadows.

Sauce alone. See HEDGE MUSTARD.

Saunders. See SANDERS.

SAUSAGE, a preparation of food under different names, which may please the palate of some persons, but is, nevertheless, an aliment which the dyspeptic should cautiously avoid. Beef sausages are, however, the least injurious.

SAVAGE, GROUND BEE, or *Sphex*, a genus of insects, consisting of one hundred and twenty-nine species, scattered over the globe; seven common to our own country. They are subdivided into, antennas setaceous, lip entire, tongueless;—antennas filiform; lip emarginate, with a bristle on each side; tongue inflected, trifid. This genus has the wings in each sex plane, incumbent, and not folded; sting pungent, and concealed within the abdomen. This tribe contains insects, perhaps, the most fierce and rapacious of this class of beings. They do not feed upon honey, or accommodate its young with that kind of provision, but they attack insects much beyond their own size, and that whether they are defenceless or armed: for they are provided with strong jaws, and a sting poisoned with a liquor, fatal to every animal with which they engage. The following are examples: the *spirifex*, or Turner savage, is chesnut brown, with a shade of blue; eyes large, black; antennas brown; sting yellow. Inhabits Europe, Egypt, and our own country, in cylindric cavities, wrought within like a honey-comb, on the sides of cliffs, and on the mud-walls of cottages. The *viatica* is black, slightly hairy; seizes and buries caterpillars, one by one, in its cells, depositing at the same time an egg in each, and then closing them up. The *sabulosa* is black and hairy, inhabits sandy and gravelly places; female digs holes with her fore feet, pawing like a dog, in order to deposit caterpillars or spiders; like the last, she deposits one in each, and at the same time drops in one of her own eggs, and fills up the opening.

Savin. See JUNIPER.

Savings Bank. See BANK FOR SAVINGS.

SAVORY, or *Satureia*, a genus of plants comprehending eleven species, natives of the warmer parts of Europe, the Levant, and America. The following are cultivated: the *montana*, or Winter savory, is perennial, having a low shrubby stalk, and linear-lanceolate, entire, mucronate leaves; flowers axillary, upon short petioles, and pale flesh colour; it is a native of the South of France, and flowers in July and August. The *hortensis*, or Summer savory, is an erect annual, about a foot high, with leaves lanceolate, very entire; flowers like the last; a native also of the South of France. The *juliana*, or Linear-leaved savory, has the whorls flat topped, and numerous; leaves linear, lanceolate; corol small, white, fragrant; a native of Italy, and flowering from May to September. The *thymvra*, or Whorled savory, is a bushy plant, with leaves ovate-oblong, pointed, dotted, bristly, and possessing a strong aromatic scent when bruised; a native of Candia. The *capitata*, or Ciliated savory, has spiked flowers, small and white; leaves carinate, dotted, ciliate; a hoary plant, and highly aromatic; a native of the Levant, and flowering from June to October.

The first species may be raised from seeds or slips, the others by slips or cuttings of the strongest shoots, planted in pots plunged into a moderate hot-bed. The two first are useful pot-herbs; the summer savory was formerly in the materia medica, but now expunged; the others afford varieties among collections of green-house plants.

Savoy. See CABBAGE.

SAW, an instrument which serves to cut into pieces several solid substances; as wood, stone, ivory, &c. The best saws are made of tempered steel, ground bright and smooth. The edge, in which are the teeth, is always thicker than the back, because the back is to follow the edge. The teeth are cut and sharpened with a triangular file; after they are filed the teeth are set, that is turned out of the right line by an instrument called a saw set, that they may make the kerf, or cut the wider, so that the back may follow better. The teeth are always set ranker for coarse cheap stuff, than for hard and fine; the teeth of pit-saws and whip-saws vary in their shape from this description; many of them being hollowed in a semicircular form at the base, and angular towards the apex of the teeth; the files are, of course, flat on one side, the other forms a semicircle. The saws by which marble and other stones are cut, have no teeth; these are generally very large, and stretched even by a frame.

The principal saws are the following: the *pit-saw*, the *whip-saw*, the *cross-cut saw*, the *hand saw*, the *tenon saw*, and the *compass saw*.

But the greatest improvement in saws is that of making them circular, and moving them by machinery. *Saw-mills*, as they are now generally constructed, are of two kinds, according as the saws are employed to effect their operation by a circular or by a reciprocating motion. Circular saw-mills are the most simple in their construction; in one of the simplest the machine is turned by a horse wheel, which gives motion to a pinion on a horizontal shaft; a spur wheel is fixed on this shaft, and turns a pinion on another horizontal shaft, on which a wheel is fixed in the room over the machine, and the bearings for the gudgeons of the shaft are supported on the joints of the floor; by means of an endless strap passing round this wheel, and also round a pulley on the spindle of the circular saw, a rapid motion is given to the saw, which is made of well-tempered steel plate, with teeth on its edge. It is fixed on the spindle by a shoulder, against which it is held by another moveable shoulder, pressed against the other by a nut on the end of the spindle, which is tapped into a screw to receive it. The saw has a circular hole through the middle, fitting tight upon the spindle, and a small fillet fitting into a notch, causes them to turn together.

SAW-DUST, from its property of conducting heat slowly, is one of the best substances for preserving fermented liquors in bottles, at an equal temperature.

SAW-FISH, or *Pristis*, a genus, consisting of five species, as follow: the *antiquorum*, has the snout five feet long, with from eighteen to twenty-four spines on each side; head flat on the fore part, teeth granulate; eyes large; body fifteen feet long, above blackish, beneath white; inhabits the ocean. The *pectinans*, has the snout with from twenty-five to thirty-four narrower spines on each side; inhabits the Indian ocean, and resembles the last, but the snout narrower and slenderer, and spines longer and slenderer. The *cuspidatus*, has the snout with twenty-eight broad cuspidate spines on each side, as sharp as a surgeon's lancet; habitation unknown. The *microdon* has the spines on the snout small, hardly perforating the skin; habitation unknown; twenty-eight inches long, snout ten. The *cirratus*, has the snout cirrate in the middle; spines long, with intermediate short ones; about the middle of the snout on each side a flexible appendage, three inches and a half long, resembling the beards of the cod fish; mouth with five rows of minute sharp teeth; about forty inches long; body pale brown; inhabits New Holland.

SAW-FLY, or *Tenthredo*, a genus of insects, comprising one hundred and fifty-three species, three or four natives of America, the rest of Europe; thirty-eight inhabitants of our own country. The insects of this tribe feed on the leaves of various plants; the female uses her sting in the manner of a saw, and cuts out spaces in the twigs or buds of trees for the purpose of depositing her eggs. The larve is cylindrical, soft, from sixteen to twenty-eight footed; feeds on the leaves of plants, and when touched, rolls itself up spirally. Their tribe is divided into sections,—with antennas clavate;—antennas articulate, thicker at the top;—antennas pectinate;—antennas filiform, with from seven to nine articulations; this is by far the most numerous section;—antennas filiform, with numerous articulations. The *femorata*, having two large thighs, is wholly black, except the antennas, and tarsi of the feet which are yellow; and the *luctuosa alni*, a quiet and beautiful fly, found among alder plantations, having the head and trunk yellowish brown, the body coal black, and the wings pale yellowish brown, with little yellow risings upon their fibres, may be mentioned as examples of this genus.

SAW-WORT, or *Serratula*, a genus of plants, comprising eighteen species, for the most part natives of warm climates, two common to our own hedges or hills; the following are cultivated: the *novoboracensis*, or Long-leaved saw-wort, with a perennial root, stalks seven or eight feet high, and purple flowers; the *præalta*, or Tall; the *glauca*, or Glaucous leaved; the *squarrosa*, or Rough-head; the *scabriosa*, or Ragged cupped, and the *spicata*, or Spiked saw-wort. All these are natives of North America, and have mostly purple flowers. They may be increased either by seeds or by parting the roots: the old plants should not have their roots parted oftener than once in three years.

The *tinctoria*, or Common saw-wort, is an indigenous perennial, growing in woods and pastures; it is employed occasionally by dyers to impart a yellow colour to coarse woollen goods. It will also yield green, and other colours, by combination with indigo, &c.

The *arvensis*, Corn saw-wort, or Way thistle, is found in our corn fields, and on road sides; it is often a troublesome weed; it yields, as well as many other plants usually denominated weeds, a considerable portion of potash, by the usual process of combustion.

SAXIFRAGE, or *Saxifraga*, a genus of plants, consisting of forty-nine species; two or three natives of America and China, the rest of Europe; twelve indigenous to the marshes, hills, pastures, rocks, walls, or roofs of our own country. They are thus subdivided,—leaves undivided, stem in most naked;—leaves undivided, stem leafy;—leaves lobed, stems erect; — leaves lobed, stems procumbent. The following are cultivated: the *cotyledon*, or Pyramidal saxifrage; flowers in small clusters, white, with red spots in the inside: several varieties; a native of the Alps;—the *granulata*, or White saxifrage, with stem and leaves reddish brown, is indigenous to our own pastures. It is a constant inhabitant of dry soils, and its presence is said to be a sure indication that gravel is not far beneath the surface. It was formerly supposed useful in gravelly complaints. The *crassifolia*, or Thick-leaved saxifrage, is many flowered, a native of Siberia. The *umbrosa*, London pride, or None-so-pretty, is indigenous to our own mountains; the flowers are white, or flesh colour, beautifully dotted with yellow and dark red; the *hypnoides*, Mossy saxifrage, or Ladies' cushion, has large white flowers, a native of our own country, flowering in May, and often again sparingly in July or August. The *sarmentosa*, or Chinese saxifrage, has the two lower petals very long, white, and three smaller whitish stained with red; flowers in June and

July; a native of China and Japan. The *rotundifolia*, or Round-leaved saxifrage, has white flowers spotted with red; a beautiful plant, indigenous to Switzerland.

The several species of the saxifrage, usually cultivated in gardens, may be propagated by offsets, which are sent out from the old roots in great plenty. They may be taken off at almost any season when the weather is mild, and should have a very dry soil and a shady situation; the best season for transplanting them, is July. After their leaves are decayed, they should be put into fresh undecayed earth, and placed in the shade till autumn; they may, however, be exposed in winter to the sun.

Saxifrage, the Burnet. See BURNET SAXIFRAGE.

SAXIFRAGE, the GOLDEN, or *Chrysosplenium*, a genus of plants, consisting of two species, the *alternifolium*, and the *oppositifolium*, both natives of the shady springs of our own country, well known, but of no importance.

SAXIFRAGE, the MEADOW, SULPHUR WORT, or *Peucedanum*, a genus, consisting of eleven species, for the most part natives of warm climates; two indigenous to our own country. The *silaus*, or Common meadow saxifrage, has pinnatifid leaflets, with opposite decurrent segments; it is found wild in our meadows; the roots, leaves, and seeds, have been recommended as aperient diuretics and carminatives; but modern medicine takes no notice of them. The *officinale*, Hog's fennel, Horse tongue, or Common sulphur wort, is also a native plant, found in our ditches; the roots and stalks have a strong smell, somewhat like sulphur, and an acrid taste; its juice, as well as the root, has been recommended as nervine and anti-hysteric; but its medicinal virtues are doubtful.

SCAB, or SHAB, an eruptive and infectious disease to which sheep are liable, attended with troublesome itching; it appears to be similar in its nature to the mange of dogs, and the itch of the human subject. A variety of nostrums have been recommended for the cure of this complaint; the best with which we are acquainted, and which is very effectual, we have described under our article mange. See MANGE.

Scabies. See ITCH.

SCABIOUS, or *Scabiosa*, a genus of plants, comprising forty-one species, natives, for the most part, of the Levant; three indigenous to our own pastures. They are sub-divided into, corollets four-cleft;—corollets five-cleft. The species chiefly cultivated are the *alpina*, or Alpine, the *leucantha*, or Snowy, the *succisa*, or Devil's bit, the *integrifolia*, or Red-flowered annual, the *tartarica*, or Giant, the *gramuntia*, or Cut-leaved, the *stellata*, or Starry, the *atropurpurea*, or Sweet, the *argentea*, or Silver, the *graminifolia*, or Grass-leaved, the *Africana*, or African, the *Cretica*, or Cretan scabious. The annual kinds of this genus may be propagated by sowing the seeds in a moist shady border; after which they will, in general, require no other attention. The perennial roots may be propagated by parting their roots in autumn.

The *succisa*, or Devil's bit scabious; the *arvensis*, or Field scabious, and the *columbaria*, or Small scabious, are the indigenous species; but they require no particular notice.

Scad. See MACKAREL.

SCALD, an injury more or less extensive, produced by some hot liquor; it is more usually applied to the mischief arising from boiling water.

The best remedy for scalds arising from boiling water, *immediately after the accident*, is to plunge the part instantly into cold water, or cold vinegar, and keep it there for at least ten or fifteen minutes, or even more, till the extraordinary heat is carried off. In many instances this simple remedy, when applied immediately, will completely remove the mischief without any other application. If this *immediate* application, is not, or cannot be complied with, still cold water or vinegar may be of service, if applied some minutes *after* the accident, although the longer the delay, the less is the chance of their success. Vinegar, however, may be applied even after there is a blister; or even if the skin be broken. A liniment, composed of equal parts of linseed oil and lime water, may be applied by cloths dipped in it and folded round, or on the part, and renewed occasionally. Or extract of lead and lime water, in the proportion of one drachm of the former to a pint of the latter may be employed. Every family ought always to keep the articles here mentioned, to be at hand in case of such accidents. A liniment of turpentine has also been recommended. See LINIMENT, and the directions there given. Severe scalds will require precisely the same treatment as burns. See BURNS. In all serious accidents of this kind, a medical practitioner should be invariably consulted.

SCALD HEAD, or *Tinea capitis*, a disease affecting children, distinguished by small ulcers at the roots of the hairs of the head, producing a friable white crust. There are two kinds of this complaint, one commonly known by the term *scald head*, the other by that of *ring-worm*. They are both supposed to be contagious, but the former much less so than the latter. In both cases, not only actual contact, but the wearing of hats, caps, &c. the use of combs, hair-brushes, &c. of those children who are affected with them should be carefully avoided The scald head continues, in some instances, from three to eighteen months. Children placed under the care of nurses are oftener affected with scald heads than those nursed by their mothers; hence it is concluded that a want of cleanliness is sometimes a cause of the complaint.

The cure, for both kinds, is to be effected by shaving the head at least once a week; the head must be washed with warm water, or yellow soap and water, twice a day, and anointed after each washing with *figwort ointment*. See FIGWORT. When this ointment cannot be obtained, tar ointment with sulphur, pepper ointment, or an ointment made by mixing two drachms of the fine powder of Indian berries, *cocculus indicus*, with an ounce of hog's lard, may be employed.

All violently irritating applications should be avoided; the hairs should not be pulled out by violent means, as has been frequently done; nor should the inhuman practice of pitch caps or tweezers be resorted to. Blisters are ineffectual.

An application of tar ointment with calomel, in the proportion of an ounce of the former to two scruples of the latter, has been respectably recommended, and may be sometimes effectual; but it should not be forgotten that it is a dangerous, though powerful remedy.

A decoction, made by boiling two ounces of tobacco in a pint of water, for a few minutes, has also been recommended as a lotion for this complaint. Whatever medicines are applied externally, great attention should be paid to the bowels: they should be kept moderately relaxed. Occasional doses of calomel will often be of service.

SCALDING MIXTURE, in farriery, a medicine composed of several stimulating ingredients, and applied in a state of scalding heat to the diseased parts. See FISTULA of the Withers.

SCAMMONY, or *Scammonium*, a gum-resin obtained from the root of a species of bindweed, the *convolvulus scammonia*, growing in Syria. It is collected in the beginning of June, by clearing the ground away from the root, the top of which is cut off in a sloping direction, about two inches below where the stalks spring; a milky juice flows, which is collected in a shell. Each root yields a few drachms only, which are drained off in about twelve hours. The juice from several roots is put together, often into the leg of an old boot, for want of a more proper vessel, where, in a little time, it grows hard, and is the genuine scammony. It is imported from Aleppo and Smyrna. That from Aleppo is by far the best; they are both too often most shamefully adulterated, either before they are imported into this country; or after they arrive here, by being, when powdered, mixed with sugar, or other diluting ingredients; so that it is scarcely possible to obtain, in the shops, *genuine powdered Aleppo* scammony.

Good *Aleppo* scammony is light and friable, of a somewhat dark resinous fracture, and on the outside, of a greyish colour. Smyrna scammony is heavy, hard, ponderous, and almost black; it should never be employed. And in order to obtain genuine scammony, it never should be bought in powder.

The smell of *Aleppo* scammony is very peculiar; the powder, if received into the lungs, affects the respiration in a very singular and oppressive manner. It should be, therefore, pulverized with caution. The powder is a light grey. Its specific gravity is 1,235. Alcohol dissolves two-thirds of its weight, but proof spirit is its best menstruum, dissolving it wholly, except its impurities.

Scammony is a drastic cathartic, operating in general, both quickly and powerfully. In a torpid state of the intestines, in hypochondriasis, mania, &c.; in worm complaints, and in dropsy, it is a valuable medicine. And, except in an inflamed, or very irritable state of the bowels, it is a safe and efficacious purge. It is, however, apt to gripe, and is, therefore, usually combined with an aromatic, with a drop of some essential oil, as cloves, or with other purgatives. See ALOES, COLOCYNTH, and COSTIVENESS. The dose of scammony is from five grains to sixteen, given in powder, or as a bolus, or in the form of mixture rubbed with almonds, gum, extract of liquorice, or water.

The following preparations of scammony are ordered by the London College.

Compound powder of scammony: Take of scammony, and hard extract of jalap, of each two ounces; of ginger-root, half an ounce; rub them separately to a fine powder, then mix them. The dose of this is from ten grains to fifteen, in worms, dropsy, and mucous obstructions of the bowels.

Confection of scammony. Take of scammony powdered, an ounce and a half, cloves bruised, ginger-root powdered, of each six drachms; oil of caraway half a drachm, syrup of roses a sufficient quantity. Rub the dry substances into very fine powder; then add gradually the syrup, and rub again; lastly, after adding the oil of caraway, mix the whole together. This is a stimulating cathartic, and may be given from half a fluidrachm to one fluidrachm.

For the mode of treatment of those persons who have taken scammony in an over dose, see POISONS.

SCAPULA, in anatomy, the bone commonly called the shoulder blade. See BLADE of the SHOULDER.

Scarf-skin. See CUTICLE and SKIN.

SCARIFICATION, in surgery, a superficial incision made with a lancet, or an instrument called a scarificator, for the purpose of taking away blood, or letting out fluids.

Scarification is also sometimes employed in farriery with good effect: such as in dropsical swellings of the belly, or the sheath.

SCARIFIER, or GRUBBER, an implement in agriculture. It is an improvement on the *scuffler*, which has a number of triangular plates, or feet, the edges of which are steeled, and fixed at the bottom of as many iron bars, somewhat similar to the legs and feet of a duck. The scarifier has the iron bars made with sharp edges, and bent forward like so many coulters. It is such an efficient implement, that no extensive farmer should be without it; and may be considered one of the greatest modern improvements in the mode of cultivating the soil.

Scarlatina. See SCARLET FEVER.

SCARLET, a beautiful bright red colour. See COLOUR-MAKING, and DYEING.

Scarlet bean. See BEAN, KIDNEY.

Scarlet convolvulus. See QUAMOCLIT.

SCARLET FEVER, or *Scarlatina*, a contagious disease, which attacks persons of all ages, but children and young persons are most subject to it. It appears at all seasons of the year, but is most frequent towards the end of autumn, or beginning of winter, at which time, it very often becomes a prevalent epidemic.

It is distinguished by fever, thirst, dry skin, and sometimes anxiety, nausea, and vomiting. About the third day, a scarlet efflorescence appears on the skin, which, however, seldom produces a remission of the fever. On the departure of the efflorescence, which usually continues out, only three or four days, a gentle sweat comes on, the fever subsides, the cutiele falls off in small scales, and the patient gradually recovers his former strength and health. On the disappearance of the efflorescence, an anasareous swelling of the whole body sometimes comes on ; but this is usually of very short continuance. It is readily distinguished from the measles, by the efflorescence being of a bright scarlet colour, like that of a boiled lobster.

It is of three different kinds. The first is the slightest of those diseases of the skin to which children are subject, and requires scarcely any medical treatment. The second is somewhat obstinate in its character, and the third is one of the most violent and fatal known in this country. In its more severe forms it is often accompanied with an ulcerated sore throat, and hence has been termed *scarlatina anginosa.* These varieties proceed from the same source of contagion, and may be found existing at the same time, and under the same roof, in schools and large families, attacking children either in its mild or its malignant form, according to the peculiarity of constitution, or other predisposition.

In the simple form of this disease, nothing further is requisite than to keep the child in an open, well ventilated, and moderately warm apartment, on a light vegetable diet, cooling drinks, and to keep the bowels somewhat relaxed, but not loose: after the eruption has disappeared, a dose or two of medicine will be necessary.

Where there is a sensation of soreness in the throat, and the head appears much affected, no time should be lost in sending for a physician. If one cannot be had, the following emetic should be given immediately. To one ounce of ipecacuanha wine add one grain of emetic tartar, or two drachms of antimonial wine. Give a tea-spoonful every ten minutes, until it excites vomiting.

After the operation of the emetic, a dose, consisting of equal parts of antimonial powder and calomel, according to the age of the patient, (See DOSE) should be given every three or four hours till it operates. A warm bath will considerably facilitate the operation of this medicine ; and often moves the bowels when purgatives will not.

Should the swelling and inflammation of the throat be considerable, so as to occasion difficulty in swallowing, a blister should be applied to the throat, the emetic repeated, and the antimonial powder continued in larger doses.

The bowels should be kept open by scammony, or jalap, and calomel occasionally. Should a diarrhœa come on, rhubarb should be given in their stead, and the antimonial powder in smaller doses.

When the skin is hot and dry, the whole body may be sponged with tepid, or cold water, which will refresh the patient, moderate the heat, and dispose to sleep. Ripe fruits, and acid drinks, may be frequently used ; and cold water may be drunk at pleasure. The inhalation of the steam of hot water and vinegar is useful, and may supersede the use of gargles.

Ventilation and *cleanliness*, more especially when this disease occurs in schools and other places, where great numbers of children are living together, are essential, as remedial processes. See CONTAGION.

It is said that scarlatina can only be taken once by the same individual ; this is at least doubtful ; as some persons have, unquestionably, been affected by it twice.

A *dropsical* state sometimes succeeds this disease, and is frequently more dangerous than the disease itself. Active purgatives, as jalap, scammony, gamboge and calomel, combined with antimonial powder, will generally effect a cure. If great debility be present, with loss of appetite, &c. stimulating food, such as beef-tea, &c. must be had recourse to.

Scarlet Jessamine. See TRUMPET FLOWER.

SCARUS, a genus of fishes comprehending eight species; the following are the chief: the *rivulatus*, with continuous, smooth, serrate jaws, blueish body, and black spots, and longitudinal rivulets; scales very minute; nearly a yard long; flesh eatable, although the spines of the rays produce a temporary inflammation: inhabits Arabia. The *stellatus* has an oval body, is half a foot long, and found also in Arabia. The *ghobban* has the body whitish; an inhabitant of Arabia.

Scent. See SMELL.

SCHEELE'S GREEN, a precipitate of a fine apple-green colour, obtained by a mixture of arsenite of potash with a solution of copper. It is a useful pigment.

SCHIST, in mineralogy, an argillaceous earth, including many varieties of slate. See SLATE.

SCHOOL, a building wherein the languages, the arts, or sciences, are taught.

The methods of instruction in many of the ordinary schools of this country, as well as in other parts of Europe, have, during the last twenty years, undergone considerable alteration; particularly relative to *reading*, *writing*, and *arithmetic*; such alteration is, doubtless, a great improvement; its chief feature consists in conveying instruction through the agency of the pupils themselves, some of those who have made a certain progress being appointed monitors or masters to a certain number, usually about ten, in the classes below them in intelligence. The classes, in such schools, are divided usually into from eight to twelve, not exactly according to their age, but to the knowledge which they possess.

Children who are learning to read, may be classed thus: 1st class, A. B. C;—2d, class, words or syllables of two letters;—3d, words or syllables of three letters;—4th, words or syllables of four letters;—5th, words or syllables of five letters;—6th, reading or spelling lessons in the Testament;—7th, the bible;—8th, a selection of boys who read best from the 7th class.

Children who are learning to write may be classed thus: 1st class, printing A. B. C.;—2nd, writing alphabet, or words of two letters;—3d, words of three letters;—4th, words of four letters;—5th, words of five letters;—6th, words of two syllables;—7th and 8th, words of more syllables.

Children who are learning arithmetic may be classed thus: 1st class, those who are learning to make and combine units, tens, &c.;—2d addition;—3d, compound ditto;—4th, subtraction:—5th, compound ditto;—6th, multiplication;—7th, compound ditto;—8th, division;—9th, compound ditto;—10th, reduction;—11th, rule of three;—12th, practice.

It has been found that children learn the letters of the alphabet soonest by forming them in sand with their fingers. For this purpose a form is prepared, and a monitor placed at the head of the class to direct them. They learn to write most quickly by pencils and slates.

This new method of instruction was brought before the public, about twenty years ago, by Mr. JOSEPH LANCASTER, and Dr. BELL, with some trifling difference in the detail; it has been found that the best plans are those in which Mr. Lancaster's and Dr. Bell's methods are combined. On this subject a tract published by the Rev. Mr. POOLE, of Enmore, may be consulted with advantage by every practical school-master.

By returns made up to the 1st of May, 1820, it appears that there are in England and Wales 37,382 schools of all kinds, in which are educated 1,571,372 children of both sexes. The systems of Bell and Lancaster have been more or less adopted in 1411 of these schools. The French language is taught in 7520, and the dead languages in 2327. The number of persons employed in education, as masters, governesses, assistants, and private tutors, is estimated at 56,330.

A bill for the general education of the people was brought into Parliament, during the last session, by the indefatigable Mr. BROUGHAM; but as it has not yet passed into a law we can take no further notice of it here.

It must strike the most casual observer that the knowledge or art of reading, writing, and arithmetic, although it furnishes many of the means of thought, and of exercising the understanding, does not, in itself, except in the few means by which it is conveyed, impart that which it is desirable all mankind should possess—A KNOWLEDGE OF THEIR DUTIES. The imparting to, and impressing upon the human mind such knowledge is, and ever ought to be, the CHIEF business of all education. It is unfortunate that hitherto, in education, the means have been almost always mistaken for the end: hence one cause, amongst others, why so little progress has been made in the proper education of the human mind; and why the science of morals has been stationary or retrograde, whilst almost every other science has advanced. See EDUCATION and MIND.

SCHORL, in mineralogy, a genus of argillaceous earths, consisting principally of silica, alumina, and oxide of iron. Several species have been observed: *volcanic* schorl, Leucite, Basaltine, or White garnets; colour white, or greyish white, found in the lava of Vesuvius. *Thummerstone*, or Brown purple schorl, is clove brown, inclining sometimes to red, green, violet, or black; found in Saxony, Norway, &c. *Black schorl*, or Brasil tourmaline, is a columnar-figured basalt; specific gravity 3,092, opaque, making a pale grey scratch; found in Cornwall, and known there by the name of *cockle*; found also in Ceylon, Spain, Saxony, &c.: another variety, called Ceylanite, found in Ceylon, in six-sided crystals; green, red, dusky yellow, or bluish; specific gravity, 3,793. The *electric schorl*, Ceylon tourmaline, or Diaphanous borax, when heated at 200 of Fahrenheit, attracts light bodies at one end, and repels them at the other: found in Ceylon, Brasil, Germany, &c.; colour generally green, sometimes brown, red, or blue.

Sciatica. See RHEUMATISM.

SCIRRHUS, or SCHIRRUS, a hard indolent tumour, of a glandular part, not readily suppurating. An incipient scirrhus is seldom accompanied with a discolouration of the skin; but as the disease proceeds, a dusky redness, purple, or even livid appearance of the surface is commonly seen; and it is also in such state, usually accompanied with pain. When the breast is the seat of scirrhus, the altered part is hardened, often unequal in its figure, and occasionally accompanied with increase of the dimensions of the breast; at other times, there is a contraction and diminution of bulk, a retraction of the nipple, and a puckered state of the skin. It occurs in different parts of the body, such as the womb, liver, breast, arm-pits, about the neck, &c. It may arise from inflammation, by blows, &c. or it may occur spontaneously, in certain habits. Schirrus most commonly precedes cancer.

As scirrhus appears to be a disease arising from inaction of the part, whatever contributes to increase its action, ought to be beneficial. Hence warm stimulating applications to the part, such as mercurials, the warm gums, ammoniacum, sagapenum, galbanum, the liniment of ammonia, liniment of camphor, &c. accompanied at the same time, with suitable internal medicines, such as bark, ammonia, &c. and nourishing diet, are evidently indicated.

In desperate cases, where these means prove unavailing, extirpation is the only remedy; and this must be, of course, effected by the experienced surgeon. Indeed, the safest course in this complaint is to take the advice of the surgeon at once.

Since our article on cancer was written, a work has been published by Mr. ALDIS, a surgeon residing in Nelson-square, London. It contains a compendious history of what is known relative to the cure of cancer, and recommends a *gradual elevation* of the tumour, by a process not detailed, and by which Mr. Aldis asserts, he has effected the cure of many complaints of this nature. We mention this work, and Mr. Aldis's name, because we consider it our duty to give our readers the best information on every subject, which is in our power; but the concealment of the detail of the process is an unworthy species of quackery, from which the scientific should ever be free.

Mr. SAMUEL YOUNG, who has excited the attention of the medical world by a new method of curing cancers by *compression*, has also published an account of some recent cases of the success of his method, in the Medical and Physical Journal for October and November, 1820, which those who are interested in the cure of this disease, will do well to consult. Our limits prevent a further notice. See CANCER.

SCIENCE, a very indefinite term: it has been defined, knowledge; knowledge, however, implies more than the term science. See KNOWLEDGE. Science implies that knowledge which is acquired by study, and the principles of which are susceptible of demonstration. It is contradistinguished from art. The exercise of most arts, supposes the presence of a natural body, or bodies, on which the art is exercised; but art also implies contrivance and design; thus we say the art of poetry. Science is the knowledge of the rules by which the art is exercised. Hence we say the science of astronomy, of optics; the art of gardening; the art of reducing metals, &c. See ART.

Scolopax. See CURLEW.

SCOLOPENDRA, or CENTIPEDE, a genus of insects, comprehending thirteen species, scattered over the globe: three common to our own country. The legs of this tribe are numerous: as many on each side, as there are segments of the body. Of this hideous race, some live beneath the bark of decayed trees, or are found below stones, or garden boxes; others inhabit fresh and salt waters; they are all remarkable for their quick progressive motion. The following are most worthy of note. The *forficata*, with fifteen legs on each side, has the body of a dun colour. The *marina* is in form somewhat resembling the leech; it builds those small edifices of a brittle and porous texture, which are seen upon the shore at low water. In the East Indies, and America, are scolopendras from four to six inches long, and as thick as the finger: they are truly hideous in appearance, and their bite reckoned dangerous. Some of these are said to be without eyes; it has been also asserted that, when cut into pieces, each segment, like those of the polype, is capable of reproducing an entire animal. The most venemous of the genus is the *morsitans*, inhabiting India, with twenty legs on each side, and eight eyes. Some are phosphorescent. Such is the *electrica*, having seventy legs on each side, the body linear; this animal inhabits our own country and Europe generally, in decayed wood, and shines in the dark. The *phosphorea* has seventy-six legs on each side, and shines like the glow-worm in the dark; has been known to fall from the air, into a vessel one thousand miles from land, in the Indian seas; inhabits Asia.

Scordium. See GERMANDER.

SCORPÆNA, a genus of fishes, comprehending nine species, scattered over the globe: the following are the chief: The *porcus*, Smaller, or porcine scorpæna, in its external form resembles a perch, but it has an enormous head, rendered frightful by the strong spines with which it is beset; colour darkish, dirty yellow, mixed with brown spots; skin covered with extremely minute scales, resembling those of serpents; about a foot long; inhabits the Mediterranean; when touched, erects and wounds with the spines of the dorsal fin, which is single and long; the anterior rays spinous. The *scrofa*, Greater, or rufous scorpæna, inhabits the Atlantic, Mediterranean, and Northern seas; from three to four yards long; body whitish-tawny, spotted with brown, and covered with large scales; flesh eaten in Italy: mouth large; a most voracious fish, preying not only on other fish, but on sea-birds. The *horrida* has the body beset with callous tubercles; and variegated with brown and white; head very large; one of the most uncouth and hideous animals of the sea. The *volitans* is less than the river perch; has the power of suspending itself in the air for a short time, by means of its long pectoral fins, when pursued by large fishes; body varied with brown bands, and orange and white lines; flesh delicious; inhabits the fresh waters of Amboyna and Japan.

SCORPION, or *Scorpio*, a genus of insects comprising ten species; distinguished by having eight legs, besides two chelæ, or hands, seated on the forepart of the head, eyes eight, three placed on each side of the thorax, and two on the back; tail long, jointed, and terminated by a sharp crooked sting; on the underside between the breast and abdomen, are two instruments resembling a comb. Ten species, inhabitants of climates warmer than our own.

They are all armed with a slightly pungent sting; but none of them are dangerous, except in very hot climates. They prey upon worms, spiders, flies, &c. and even on one another; larva and pupe eight footed, nimble, resembling the perfect insect. The following are examples.

The *Americanus*, has the combs with fourteen teeth; body spotted with brown; nearly two inches long; inhabits South America. The *Europæus*, or Italian scorpion, has the combs with eighteen teeth; body brown; from the head to the end of the tail, about three inches long; inhabits the southern parts of Europe, and is said to be viviparous. The *Afer* has the combs with thirteen teeth; colour, deep glossy brown, segments terminating in a band of bright yellow; two eyes in the back, sparkling like diamonds; strongly resembles the lobster in its general appearance; inhabits India, Persia, and Africa; very irascible and poisonous.

It is to M. de Maupertius that the public is indebted for the first accurate philosophical account of these animals. According to him they are all viviparous, the body of the pregnant female exhibiting, when opened, between forty and fifty living young. Each of these is separated from the rest by a thin membrane, while all are united by a common filament. In order to ascertain the strength of their venom, this philosopher bred a great number together, and let them loose upon dogs and other animals; and he found that sometimes the sting was so poisonous as to swell the whole body of the wounded animal, which was attacked with violent retchings, convulsions, and death. At other times, whether from the difference of food, or some other cause, he found the sting harmless.

The scorpion is supposed to discharge his poison from two or three foramina at the tip of the sting. Some naturalists, however, have denied the existence of such foramina.

For the treatment of persons who are stung by this animal, see POISONS, and SERPENT.

SCORPION-FLY, or *Panorpa*, a genus of insects, consisting of nine species, scattered over the globe. The *Communis* is the only one indigenous to this country: its wings are of equal length, spotted with black, and transparent; body longish; seen in our meadows, in the early part of summer. The *Coa*, with erect wings, beautifully spotted with brown and yellow, the lower ones linear, and very long; is a native of the Greek islands; it is larger than the preceding.

Scorpion senna. See BLADDER SENNA.

Scorzonera. See VIPER-GRASS.

Scotch fir. See PINE.

Scotch kale. See CABBAGE.

Scots Pills. See QUACK MEDICINES.

SCOURING, a disease well-known, to which domestic animals are liable: we have mentioned under DIARRHŒA, the mode of treating horses affected with this complaint. In cattle, it is often a more serious disease. When it has continued long, a general weakness and loss of flesh is the consequence; the animal becomes hide-bound, and has a rough staring coat.

It often arises from the animal's being heated in driving, and particularly from being suddenly cooled when in this state: and, in milch cows, from a want of sufficient nourishment. The first step towards a cure is, removing the beast from the open field to a warm sheltered barn, or a shed; and the diet should be nutritive, consisting of oatmeal, or wheat-flour gruel, good hay, oats, &c. A dose of some mild mercurial, with a little rhubarb, or castor-oil, may be given to clear the bowels, after which a few doses of astringent medicines, such as catechu, &c. as mentioned under DIARRHŒA of horses, or the warm stimulating seeds, with Cayenne pepper, grains of Paradise, &c. may be given. When the disease is cured, care should be taken not to expose the animal to cold, wet pastures, or cold winds, for some time afterwards.

SCOURING, the process of cleaning silks, woollen cloths, &c. an art with which the mistress of every family ought to make herself acquainted.

It will be impossible for us to detail all the different methods adopted for scouring the numerous articles of clothing, bed, and window furniture, carpets, &c. but we shall endeavour to describe such processes, as, with a little variation and good sense, may be applied on almost every occasion which may occur

It may be necessary to premise, that those who carry on the art of scouring, and indeed every private person who wishes to practise it effectually, ought to be provided with a wooden instrument, called a *doll*, or maid, for the purpose of beating blankets, counterpanes, &c. in the tub, in order to clean them. It consists of four feet which are made square, each foot measures seven inches round, and is twenty inches long from the fork to the extremity of the feet. From the fork to the top of the doll is sixteen inches, making the height of the doll, altogether, three feet; the upper part, or the shoulders, should be twenty-one inches in circumference: at the upper end is a cross pin, by which it is held firmly. The tub should be two feet and a half in height; the diameter of the top about two feet, and of the bottom fourteen inches; it should also have a false bottom, in order that the under part of the tub may be level with the floor, by which the bottom will be prevented from being beaten out. It will be also desirable to have a peg or hook driven into the wall exactly over the tub, in order to attach whatever may be desired to it, to twist it and wring it well by manual labour, with the assistance of a short stick as a lever.

To scour cotton counterpanes, quilts, &c. Cut a pound of mottled soap into thin slices; put it into a pan with a quarter of an ounce of potash, and one ounce of pearl-ash; pour a pail full of boiling water on it; let it stand till it is quite dissolved; then pour hot and cold water into the scouring tub with a bowl of the solution of soap. Put in the counterpane, and beat it well with the doll, often turning it over in the tub. Then wring it across a gallows or a hook, which is done by turning the two opposite ends round each other, and putting a small clean stick between them. It may be thus wrung very dry, the harder, without injuring it, the better. The liquor may be afterwards used for old cottons or woollens. The counterpane must now be immersed in a second liquor, and be beaten as before; wring it out again, and rinse it in clean cold water. Lastly, pour a sufficient quantity of boiling water into the tub with a small quantity of the solution of soap, so as to reduce it to a very thin lather; put three table-spoonfuls of liquid blue into the tub, and stir it about; put in the counterpane, and beat it with the doll about five minutes; take it out: as it dries in the wind the blue mostly goes off, and leaves a brilliant white. Where the colour of the cottons is brown and bad, it will be necessary to boil them with the last of the three liquors, for an hour, in a copper, previously to bluing them.

To clean scarlet cloth. For a lady's

mantle; dissolve half a pound of the best white curd soap in water; but as the quantity required will depend upon the state of the garment, two ounces will frequently do; sometimes a pound may be necessary. If any black-looking spots appear, dry soap should be rubbed on them. When the mantle is spotted all over with the soap, take hot water and a brush and brush it off. If it be very filthy, some part of the stains will remain; in this case the whole garment must be dipped into the solution at, or rather under a hand heat, and rub well such parts as are most stained. Wring it strongly from the first soap liquor, and, having another of the same kind ready prepared, as at first, only somewhat hotter, immerse the garment in it and rub as before; the colours beginning to stain the liquor must be the signal for dispatch. If this second liquor does not effectually cleanse the article, it may be concluded that it requires dipping or re-dyeing: as soon, however, as the colour begins to give, wring it out, and immerse it in a pail full of warm water to extract what soap remains; wring it out of this, and immerse it in a pan of cold spring water, in which a table-spoonful of solution of muriate of tin has been previously mixed. The garment should remain in this liquor for about ten minutes, being handled now and then; afterwards it should be hung to dry in the shade; or, if the colour be much worn, in a warm room; let it be cold pressed.

If scarlet cloths should not be much soiled, they may be cleaned by more simple means, as follow: take a quarter of a peck of wheaten bran, pour boiling water on it in a hair sieve; when the bran water is cooled down to a hand heat, immerse the cloth, and rub it well now and then, holding it up to the light to see where the spots are. A second liquor is to be prepared like the former, adding to it a quarter of an ounce of white tartar; wring the cloth out from the first bran liquor, and immerse it in this, and if the colour is not altered, it is finished. But should it be altered, or darkened, a clean liquor must be made of cold spring water, to which a drop or two of the solution of tin must be added; the cloth must remain in this liquor ten minutes, and then be wrung out and dried.

Scarlet cloth may be *dipped* thus: To boiling spring water in a vessel sufficiently large to contain the cloth, add four ounces of young fustic, or zant, and one drachm of powdered cochineal, and an equal quantity of cream of tartar and cochineal; when this has boiled five or six minutes, cool down the liquor by adding a pint or two of cold spring water, and a table-spoonful of the solution of tin; stir it, put in the cloth, and boil it for ten minutes; when dry, let it be cold pressed. A cheaper method is to use two ounces of the best crop madder, and the same quantity of turmeric, boiled for ten minutes; but for a deep red the turmeric must be omitted.

To clean white lace veils: Make a solution of soap in a clean saucepan, put in the veil, and let it boil gently for a quarter of an hour; take it out into a clean bason with some warm water and soap; gently squeeze it till it is thoroughly clean; rinse it from the soap, and rinse it afterwards in clean cold water, with which has been mixed a drop of chymic or liquid blue; then take a tea-spoonful of starch, and pour boiling water upon it; run the veil through this, and clear it well by clapping it between the hands; afterwards frame or pin it out to dry.

Black lace veils are cleaned by passing them through a warm liquor of bullock's gall and water, then rinsed in cold water, cleaned for stiffening, and finished thus: Take a small piece of glue, about the size of a bean, pour boiling water upon it, when dissolved, pass the veil through it; then clap it between the hands, and frame or pin it out.

To clean white satin, silks, &c. Make a solution of the finest hard curd soap, and when at a hand heat, handle the article through it, drawing it through the hand. If any particular spots appear, such spots must be dipped in the liquor, and gently rubbed by the hand, two or three such liquors are sometimes necessary; the article must afterwards be rinsed in lukewarm water, then dried and finished by being pinned out, and the flossy, or bright side, well brushed with a clean clothes brush the way of the nap; the more it is brushed, the more beautiful it will appear; it may then be calendered; or it may be finished by dipping a sponge into a little size made by boiling isinglass in water, and rubbing the wrong side; the articles must be then pinned out a second time, and again brushed, and dried near the fire or in a warm room. This process is chiefly for satin; silks are done in the same way, but not brushed. Or white satins may be cleaned by strewing on them French chalk in powder, and then brushing it off with a hard brush.

Coloured silks will require different processes; but, in general, an ounce of soft soap dissolved in a sufficient quantity of boiling water, and beaten till a strong lather rises on it, in which, when at a hand heat, the article may be immersed and rubbed, and afterwards rinsed in lukewarm water, will answer for common colours; care being taken to go through the process quickly, to guard against the discharge of the colour. In order, however, more effectually to prevent such accident, a pan of water slightly acidulated with oil of vitriol should be at hand, in which all bright yellows, crimsons, maroons, and scarlets, should be dipped: orange, fawn, brown, or shades from such colours, do not require the acid. A bright scarlet will require a solution of tin, see above. Blues, purples, and their shades, require a solution of white curd soap, and a small quantity of good pearl-ash.

Black silk requires bullock's gall dissolved in boiling water: the silk should be laid smooth on a table, and sponged and rubbed well on both sides with the gall liquor; afterwards wash it and rinse it well in spring water till the silk is perfectly clean; dip a sponge in glue water, and rub it on the wrong side of the silk, which may be then pinned out and dried.

To extract grease from coloured silks, muslins, &c. Put French chalk in fine powder on the grease spot; hold it near the fire, or over a warm iron reversed, or on a water plate, on which is boiling water; the French chalk will absorb the grease, and it may then be brushed out: should not one operation be effectual, it may be repeated.

To take out spots of paint from cloths, silks, &c. A clean pen must be dipped in oil of turpentine, and its contents dropped on the spot of paint; let it rest several hours on it; after which, it may in general be got off by rubbing between the hands.

Chintz bed and window furniture, when not in a very dirty state, may be cleaned by boiling two pounds of rice in a gallon of water till soft; and when the liquor is at a hand heat, the articles should be put in, and the rice used like soap; this process may be repeated with a fresh quantity of rice and water, if necessary; when dry, it may be rubbed with a sleeking stone, &c. Or it may be cleaned by washing it with a doll in a tub of warm soap lather at a hand heat. Should the colour fade in washing, (that is the red or green,) a drop or two of oil of vitriol, should be added to the last cold water in which it is rinsed.

In cleaning printed cottons, such as gowns, &c. instead of rubbing the soap on the cotton, it should be dissolved in the water, and the articles afterwards put into it and washed as usual: by these means they are most effectually cleaned When green, red, and other colours run, lemon juice, vinegar, or oil of vitriol should be mixed with the rinsing water to preserve the colours.

To dry-clean clothes of any colour. Dip a brush in warm bullock's gall, and rub over the greasy places, when the grease will immediately disappear; rinse it in cold water, dry by the fire, and take sand, such as is bought at the oil shop, and laying the coat, or other article, on a table, strew the sand over it, and knocking the brush on it, beat the sand, which should be a little damp, into the cloth. Brush it out with a hard brush: this process does also for coach linings, &c.

In scouring undyed woollens, yellow soap should be dissolved in the water, and then added to the article to be cleaned with a small quantity of pearl-ash; the heat of the water should be such as the hand can bear: the use of the doll will be found the most effectual mode of operation. Three liquors are, in general, necessary to complete the process.

To scour black, blue, and dark brown woollens: dry about two ounces of fuller's earth by the fire, pour a sufficient quantity of boiling water on it to dissolve it to the consistence of molasses or honey; plaster thinly over such spots of grease as are on the cloth; dry it by the fire or in the sun; then mix a small quantity of ox gall with half a pint of stale urine: to this add, if necessary, a little boiling water, to make the quantity sufficient for the purpose. Dip a hard brush in this liquor, and brush well the spotted places in the cloth, or coat, &c. Dip the cloth in a bucket of cold water, and wash off the filth, &c.; hang it out to dry; when nearly dry, lay the nap of the cloth the right way with a brush; and when quite dry, pour a small drop of olive oil on the hand, and pass it over the brush, with which strike the cloth: if there be not too much oil used, the cloth will appear new.

Grey, drab, fawn, maroon, and all other coloured woollens, are cleaned by forming yellow soap into a ball, and rubbing all the dirty spots of the cloth with it; let it dry a little, dip the brush in warm water and rub off the soap; if the cloth be not quite clean by this process, proceed as before, and use the water a little hotter; rinse several times and dry.

In *scouring party-coloured woollens, carpets, &c.* they are drawn over a board and according to the colours, either gall or soap must be used, or sometimes both. The spots must be soaped as mentioned in the preceding article, and then scrubbed with a brush dipped in boiling water. If the carpet, &c. should be very dirty, a solution of yellow soap, as mentioned for undyed woollens, must be made, and the article immersed in it, and beaten with the doll. In the last rinsing, it may be advisable to put a small quantity of oil to brighten the colours, especially when red and green are in it.

Scratches in horses, See GREASE and SAND-CRACKS.

SCREAMER, or *Palamedia*, a genus of birds, consisting of two species, having a conic bill, the upper mandible hooked; feet four-toed, cleft; a very small membrane connecting the toes at the root. The *cornuta*, or Horned screamer, has the wings with two spines at the head, front horned; inhabits the fenny and maritime parts of South America; three feet four inches long; always found in pairs; feeds on herbs, seeds, and reptiles; nest made of mud, and shaped like an oven; eggs two; when alarmed, rises from the ground with a loud and continued screaming. The *cristata*, or Crested screamer, has the wings unarmed, front crested. The first species is about the size of a large swan; its offensive armour is peculiarly formidable; but this bird, nevertheless, does not attack other birds. The affection and fidelity of the male and female is such, that they continue inseperable till death, and the survivor suffers severely for the loss of its partner. The plumage of this species is for the most part dark brown, mixed with a shade of green; the plumage of the other species is grey, covered with brown. In America this bird is hunted for its flesh; and it is also begun to be domesticated there for the same reason.

Screw pine. See PINE, THE SCREW.

SCREW-TREE, or *Helicteris*, a genus of plants comprehending eight species, trees and shrubs, and indigenous to India, South America, or the West Indies; commonly with yellow or purple flowers, which in one species, a native of Carthagena, are of a fetid odour; the capsules are one-celled, many seeded, spirally twisted. They are cultivated in our gardens, but require care and a green-house or stove, during winter.

SCROBICULUS CORDIS, in anatomy, the pit of the stomach.

SCROFULA, **Scrophula**, **Evil**, or *Struma*, sometimes vulgarly but very improperly called the **King's Evil**, a disease consisting in hard indolent tumours of the conglobate glands, in various parts of the body; but particularly in the neck, behind the ears, and under the chin, which, after a time, suppurate, and degenerate into ulcers, from which, instead of pus, a white curdled matter is discharged.

Scrofulous may be distinguished from scirrhous tumours, by their soft and moveable state; sometimes disappearing in one part and rising again in another. This disease is, however, not confined to external parts, but occasionally attacks the lungs, mesentery, and other organs; a swelling of the upper lip in children is, it is said, an indication of the concealed evil; but it is also a symptom of worms. Children afflicted with this malady are generally of a florid complexion; they have a soft skin and tumefied abdomen: they also often possess superior mental abilities to other children of the same age. When it attacks the lungs, a pulmonary consumption is generally the result. It seldom proves fatal, whilst confined to external parts; but it is, nevertheless, one of the *opprobria medicorum*, and in the cure of which we have yet much to learn. It is by no means a contagious disease, yet it appears, notwithstanding much which has been strongly urged to the contrary, of a hereditary nature, and is often entailed by parents on their children. It appears, also, that where a predisposition for scrofula exists, a venereal taint will often excite the disease.

When the ulcer discharges, a sharp acrimony spreads wide, and becomes deep, without showing any disposition to heal; when deep-seated collections of matter form amongst the small bones of the hand, feet, or in the joints, or tubercles in the lungs, with hectic fever, arise, the consequences are often fatal.

In the cure of scrofula, the safest and best course is to apply to the most able medical advice at once; but as this will not often be complied with, in consequence of the slow and insidious nature of the disease, it may be necessary to observe, that the cure ought to consist of those means which are calculated to improve the general health; a nutricious diet, a pure dry air, gentle exercise, tepid or warm bathing, (see **Bath**,) and strengthening medicines, such as the compound pills of iron; see **Iron**; myrrh, and the Peruvian bark, with soda. In irritable states of the system, hemlock has been sometimes advantageous. Various mineral waters, particularly those of the chalybeate kind, will also be sometimes of service. Mercury is in general injurious, if given so as to affect the mouth; but the milder preparations of this metal, such as the blue pill, have occasionally done good. Moderate antimonials, decoctions of sarsaparilla, mezereon, guaiacum, &c. burnt sponge and muriate of lime, have also sometimes produced benefit.

The applications to scrofulous tumours must vary according to the state of the parts, whether indolent or irritable. When they show no disposition to enlarge or become inflamed, it is, perhaps, best not to interfere with them; although a late writer on this complaint, Dr. **Henning**, advises their being opened, their contents evacuated, and then, if possible, healed. This proceeding must, however, depend upon circumstances, and the situation of the part. We do not hesitate to lay it down as an incontrovertible axiom, that *no scrofulous tumour should be dispersed, either by friction or by any other method*: such dispersion may produce a fatal hectic, by determining the disease to some internal part. The inflammation of the tumours may be checked by leeches; and when ulcers exist, stimulant lotions, or dressings, must be used to dispose them to heal. Sometimes the poultice mentioned under abscess will be of service; and if they are in a very irritable state, a cataplasm made of hemlock, may be applied.

The state of the bowels in this, as in numerous other complaints, must be carefully attended to.

Scrofulous ulcers are, we suspect,

sometimes mistaken, even by the faculty, for cancers. See CANCER, PULMONARY CONSUMPTION, and SCIRRHUS.

As this disease more commonly affects children, in addition to a careful attention to cleanliness, exercise in the open air, wholesome food, and tepid or warm ablutions of the skin (but by no means *cold* bathing or *cold* sea bathing,) the following medicine is, perhaps, the only internal remedy which will be necessary. Take of prepared chalk two drachms; of powdered rhubarb two scruples; of calomel one scruple; of antimonial powder two grains. Mix and divide into ten equal parts; one to be given every night. For children of two or three years old, the dose may be regulated according to their age and strength; for children under that age, half a paper will be sufficient; for those above it, a paper and a half, or two papers, may be given, and increased or diminished according to the effects produced.

SCROTUM, in anatomy, the bag which contains the testes, and which is frequently distended by the descent of the intestines in hernia. It is also subject to a disease called *hydrocele, or dropsy of the scrotum,* which is, sometimes, a local complaint; but very often only a symptom of general disease; when a local complaint, it may be cured by a surgical operation.

SCRUPLE, in apothecaries' weight, one-third of a drachm, or twenty grains.

Scull. See SKULL.

Scull-cap. See SKULL-CAP.

SCULPTURE, the art of cutting, or carving in wood stone, or other matter, and forming various figures, or representations therein; as also of fashioning wax, earth, plaster, &c. to serve as models, or moulds, for the casting of metalline figures.

Sculpture has, with the other fine arts, made considerable progress in England, during the last century. The annual exhibition of the productions of this noble art at the Royal Academy, Somerset House, tends to excite a proper emulation; and the great collection of statues at the British Museum, must also, as models, have a considerable effect in improving the student, so as to produce that excellence which genius ever desires to attain.

SCURVY, or *Scorbutus,* a disease distinguished by great debility, a pale and bloated complexion, spongy gums, livid spots on the skin, offensive breath, œdematous swellings of the legs, hæmorrhages, foul ulcers, fetid urine, and extremely offensive stools. It is a disease of a putrid nature, much more prevalent in cold climates than in warm ones. It chiefly affects sailors, and such as are shut up in besieged places, owing, as is supposed, to their being deprived of fresh provisions, and a due quantity of acescent food; cold and moisture, indolence, confinement, deficiency of pure air, want of exercise, neglect of cleanliness, much labour and fatigue, sadness, despondency, and other depressing passions, with the concurrence of a diet consisting principally of salted or putrescent food, will be sure to produce the disease.

Although it is apt to become pretty general amongst the crew of a ship, when it has once made its appearance, and has been supposed to be contagious, yet this is very doubtful. The difference between the *land* and *sea* scurvy, into which it has been sometimes divided, appears to be chiefly in degree, the former being usually unattended with violent symptoms, but only with slight blotches, scaly eruptions on different parts of the body, and a sponginess of the gums. While, in the latter, every symptom is aggravated, the prostration of strength, and inability and unwillingness to move about are great; the teeth become loose, the pulse is small, frequent, and intermitting; and in the last stage, general emaciation, diarrhœa, or dysentery, and other distressing symptoms, close the scene.

In the cure, as well as the prevention, of the scurvy, much more is to be done by regimen than medicine, obviating, as far as possible, the several remote causes of the disease, and particularly by providing the patient with a more wholesome diet, and a large proportion of fresh vegetables; and it has been found that those articles are especially useful which contain a native acid, as oranges, lemons, &c. When these cannot be procured, various substitutes have been proposed, of which the best appear to be the inspissated juices of the same fruits, or the crystallized citric acid. Vinegar, sour croute (see CROUTE), and farinaceous substances, made to undergo the acetous fermentation, have likewise been used with much advantage; so also have brisk fermenting liquors, containing a large portion of carbonic acid, such as spruce beer, cider, and the like. Mustard, horse-radish, garlic, and other stimulating vegetables, are also occasionally of service. The spongy state of the gums may be remedied by washing the mouth with either the sulphuric, nitric, or muriatic acid, sufficiently diluted, or, perhaps, mixed with a decoction of Peruvian bark. The stiffness of the limbs may be removed by fomentations, cataplasms, and frictions; and, sometimes, in hot climates, it is said, the earth bath has afforded speedy relief to this symptom.

In severe forms of the disease a physician should by all means be consulted.

SCURVY-GRASS, or *Cochlearia*, a genus of plants, consisting of nine species, scattered over different parts of Europe, four of which are common to the marshes, or muddy shores of our own country; these are

The *Officinalis*, or Common scurvy-grass, has the root-leaves heart-roundish, petioled; stem-leaves oblong; somewhat sinuate, sessile: silicles globular. It is cultivated in gardens near the metropolis, and said to be a very useful antiscorbutic; but, notwithstanding, modern medicine takes no notice of it; it was formerly in some esteem.

The *Anglicana*, or English scurvy-grass, has the root-leaves ovate, entire, petioled; stem-leaves lanceolate, toothed; silicles sessile, reticulate, with veins.

The *Danica*, has all the leaves petioled, deltoid, with three or five lobes, silicles elliptic, reticulate, with veins.

The *Armoracia*, or Horse-radish, is the most valuable of the tribe. See HORSE-RADISH.

SCYTHE, an instrument of husbandry, employed for the purpose of cutting grass, and also for the mowing of some kinds of corn.

SCYTHROPS, a genus of birds, one species of which, the *scythrops psittacus*, has only been yet discovered. The bill is large, convex, sharp-edged, channelled at the sides, hooked at the point, colour pale brown, tipt with yellowish; head, neck, and under-parts of the body, pale blueish-grey; back, wings, and tail, cinereous; the feathers mostly with dusky-blackish tips: size of a crow, but from the length of its tail, measures two feet two inches; inhabits New South Wales.

SEA, in a general sense, the great reservoir of water, into which the lakes and rivers empty themselves. See OCEAN.

The term sea is often applied in a more limited sense; thus we say the Red sea, the Mediterranean sea, the Caspian sea, &c.

SEA AIR is prescribed in a variety of complaints, and has been commonly considered more salubrious than that on land, although not known to possess in its composition a greater quantity of oxygen. It is, no doubt, occasionally advantageous in many cases of debility; and sometimes in scrofula; but we would not have our readers consider sea air itself as of so much importance in any remedial process, as the change of scene, diet, &c. which a sea-voyage, or even a transient visit to the coast, necessarily produces.

Sea Anemone. See ANIMAL FLOWER.

Sea Ape. See MORSE.

Sea Bathing. See BATH.

Sea Bear. See SEAL.

Sea Buckthorn. See BUCKTHORN, SEA.

Sea Calf. See SEAL.

Sea Cow. See MORSE.

Sea Crow, a bird. See PELICAN.

SEA CROW, or *Sciœna*, a genus of fishes, consisting of thirty species, one or two inhabitants of the Mediterranean, the rest of the Arabian seas. They are distinguished by having the head covered with scales; gill membrane, with about six rays; the covers scaly; dorsal fins two, frequently concealed in a longitudinal cavity. A great part of the fishes belonging to this tribe are black, and have obtained the name of sea-crows, ravens, and umbres, from the old naturalists. The following are the chief: the *umbra*, Sea-crow, or Umbre, of a black colour, resembling a perch; it is caught in the Mediterranean, and sold in the markets of Rome, where it is called ombrino. The *strideus*, is silvery blue; inhabits Arabia; a span long, and when first taken out of the water, utters a small shriek.

SEA-DAFFODIL, LILY DAFFODIL, or *Pancratium*, a genus of plants, consisting of eleven species, natives of the West Indies, or South America, and a few of the South of Europe, seven or eight of these are cultivated; most of them are stove plants.

Sea Dotterel. See LAPWING.

SEA-EAR, or *Haliotis*, a genus of univalve, testaceous worms, having the shell ear-shaped, with a longitudinal row of orifices along the surface; it consists of nineteen species, scattered through the seas of the different quarters of the globe. The following are the chief: the *mida*, or Midas-ear; shell roundish; both sides polished; within rich pearl colour; from seven to nine inches long; found in the Indian ocean, and around the Cape. The *asinum*, or Ass's ear, has the shell smoothish, oblong; hardly three inches long; inhabits India. The *tuberculata*, with shell subovate, is from four to five inches long, inhabits most seas, and found on our own coasts. The *iris*, is four and a half inches long; found in New Zealand; extremely rare and valuable.

Sea Fig. See SEA PURSE.

Sea Fox. See SHARK.

SEA-HARE, *Laplisia*, a genus of molluscous worms, having the body creeping, and covered with reflected membranes, with a membranaceous shield on the back, covering the lungs; feelers four, resembling ears: two species, the *depilans*, of a pale lead colour, apparently a mis-shapen mass, enveloped in a loose skin which folds over and meets on the back; from two to five inches long; is extremely nauseous and fetid, and said to occasion the hair to fall off the hands of those who touch it, whence its specific name; inhabits the European seas. The *fasciata* is black; edges of the membranaceous covering, and the feelers, scarlet; when touched, emits a black and red sanies, but not fetid or depilatory like the last; inhabits the shores of Barbary.

SEA HEDGE-HOG, SEA URCHIN, or *Echinus*, a genus of molluscous worms, comprehending one hundred and eighteen species. They are all inhabitants of the sea, many of them have been found in a fossil state; many are esculent. The body is roundish, and generally furnished with moveable spines; mouth placed beneath, and mostly five-valved; they are generally armed with five sharp teeth; the pores are furnished with a retractile tentacle or feeler to each, by which the animal affixes itself to any object, and stops its motion. The spines are connected with the outer skin by very strong ligaments, and are the instruments of motion. The species most esteemed as an esculent, and thence denominated *esculentus*, is sub-globular, with ten avenues of pores, the spaces between covered with small tubercles, supporting the spines; body reddish or yellowish; spines short, of a violet colour; inhabits the seas of Europe and India. The *vulgaris*, or Common echinus, found perpetually in a fossil state, in numberless variety of forms, is not now traced in a living state; in make it is orbicular, with ten avenues, two always near each other.

Sea Holly. See ERYNGO.

Sea Horse. See MORSE.

SEA KALE, SEA COLEWORT, SEA CABBAGE, or *Crambe*, a genus of plants, comprising eight species, scattered over the globe, of which one, the *maritima*, is indigenous to the coasts of our own country, and is cultivated in our gardens generally as a culinary plant, but, at times, for its beauty. The seeds should be sown in common earth, in either spring or autumn, where the plants are to remain; at the age of two years it produces shoots fit for use, and multiplies exceedingly by the roots, which it will continue to do for several years. The shoots are usually blanched when very young; the method of blanching them, is either to cover the bed a foot deep with warm litter only early in the spring, and to cut them off for use near the root as soon as the heads just appear above the litter; to cover each plant with an inverted garden-pot, excluding totally the light; or by covering the bed a foot or more in depth with coal ashes. This plant has for some years past been generally introduced as a fashionable, but we do not think it will ever obtain much notice as a useful, esculent.

Sea Lavender. See LAVENDER, THE SEA.

Sea Lion. See SEAL.

SEA MONSTER, or *Chimæra*, a genus of fishes, comprehending two species, distinguished by a pointed head, mouth beneath; upper lip five-parted; body lengthened; tail ending in a slender thread, and longer than the body. The *monstrosa*, or Sea monster, has the snout with porous folds beneath; body long, compressed on each side, smooth silvery, spotted with brown; feeds on crabs, &c.; inhabits the Atlantic and Northern seas. The *collorinchus*, has the snout beneath, with a smooth inflected lip; inhabits the Ethiopian, Chilen, and New Holland seas.

Sea Moss. See CORAL.

Sea Oak. See SEA-WRACK.

Sea Onion. See SQUILL.

SEA-OOZE, or WARP, is a deposition of earthy and saline matter from sea water, and abounds at the mouths of friths, estuaries, or arms of the sea, and on the shores of rivers which run into them, and which are visited by salt water. It is an excellent manure, of a most enriching nature, and adds to the staple of the soil. It is particularly useful in composts, and as a top-dressing in spring for crops both of grain and grass, more especially for the latter. The late Duke of Bridgewater made considerable use of sea-ooze, brought up from the Mersey in barges, by his canal, to lands near Worsley. It also promotes an improvement of garden soils in a surprising manner. And, it is said, that wheat or oats manured with sea-ooze, is not often affected with the rust, mildew, or any other disease. See HUSBANDRY, MANURE, and RUST.

SEA PEN, or *Pennatula*, a genus of zoophyte worms, not affixed to any other substance, but in other respects resembling a coralline. Eighteen species are scattered through the seas of the globe. Its figure is that of a quill feather of a bird's wing; it is usually about four inches long, and of a red colour; along the back there is a groove from the extremity of the feathered part as there is in a pen; the feathered part consists of fins proceeding from the stem; these fins move the animal backward and forward on the water, and are furnished with suckers or mouths armed with filaments. The chief are the *corcinea*, inhabiting the White sea; the *phosphorea*, emitting a strong phosphoric light in the dark, four inches long; red; inhabiting most seas, and found in our own; and the *encrinus*, inhabiting the Greenland seas, above six feet long, and when taken fresh from the sea appears like a nosegay of yellow flowers; the upper part of the umbel composed of from twenty to thirty cylindrical polypes, each with a claw at the top, and seated on a long pedicle.

Sea Pie. See OYSTER CATCHER.

SEA PURSE, or *Alcyonium bursa*, a species of the genus ALCYONIUM, a tribe of zoophyte worms, consisting of an animal substance, growing in the form of a plant, the stem fixed, fleshy, gelatinous, spongy, or coriaceous, beset with polype bearing stellate shells. The known species are twenty-eight, of which the *arboreum*, inhabiting the Indian and North seas, and growing six or seven feet in height; the *digitatum*, or Dead-man's-hand, inhabiting the coasts of Europe; the *bursa*, or Sea purse, the first-named species; the *ficus*, or Sea-fig; and the *galatinosus*, or Pudding-weed, are the chief.

Sea Purslane. See **Purslane.**

Sea Salt. See **Salt.**

Sea Serpent. See **Eel.**

SEA SERPENT, the **Great**, or *Scollophis Atlanticus.* We know not whether we are justified in mentioning this animal, or supposed animal. But about three years since it appears, from numerous attestations published, first in the United States of America, and afterwards in the Monthly Magazine for March, 1818, in London, with a plate of the animal, that an animal which has been named the Great Sea serpent, was seen by numerous persons in the sea near Gloucester, North America; it was in length about eighty or ninety feet: the head in form like a rattle snake, but of the size of the head of a horse; the body about the size of the human body, and divided into numerous joints; colour dark brown: its motion in the water was extremely swift, presenting, in its motions, numerous protuberances. Some accounts say it moved after the rate of a mile in two or three minutes. About four weeks after this animal was seen, a serpent of a remarkable appearance was brought from Gloucester to Boston, and exhibited as the progeny of the Great sea serpent; it had been killed upon the sea shore. A description of this animal was published by the Boston Linnæan Society, from which description, the accounts, and the plate in the Monthly Magazine, are made up.

SEA SICKNESS, a convulsive affection of the stomach, attended with great nausea and vomiting, occasioned by the wavy motion of the vessel in persons unaccustomed to the sea.

In general, unless the sickness be of long continuance, that is, for more than three or four days, it is best not to interfere by medicine, as the unpleasant consequences, resulting from the novel motion, will of themselves subside.

If, however, it should continue for a longer period, perhaps one or two draughts of sea-water, in sufficient quantity to relax gently the bowels and evacuate their contents, will be the best remedy; afterwards, small doses of cold brandy and water without sugar, with beef tea, if to be got, may be advantageous.

Upon the whole, sea sickness may be considered beneficial, and should not, therefore, be, in general, checked. In order to avoid some of its severe inconveniences, moderation in food and drink previously to, and immediately after embarkation, should be carefully attended to; as a full stomach must necessarily increase the complaint.

Sea-side Laurel. See **Laurel.**

SEA STAR, **Star-fish**, or *Asterias*, a genus of molluscous worms, having a depressed body covered with a coriaceous crust; mouth central, five-rayed. Forty-five species have been enumerated. They are all marked with a rough, white, stony spot above; they easily renew parts which have been lost by violence, and fix themselves to the bottom by swimming on the back, and bending the rays. They may be subdivided according to their forms, into lunate, stellate, and radiate. They for the most part appear like a star, whence their common as well as generic name. The species called *caput medusa* is a curious animal. The five rays of which it is composed divide into two smaller ones, and each of these into two others; which mode of regular division is continued to a vast extent, gradually decreasing in size, till at length the ramifications amount to many thousands, forming a beautiful net-work. Its colour is sometimes pale, or reddish white; sometimes brown. Some species of this genus are found on the southern shores of this country; others are dispersed through the various seas of the globe.

Sea Urchin. See **Sea Hedgehog.**

SEA WATER is arranged amongst the simple saline waters. Its chemical analysis gives a proportion of 1 of saline contents to about 3½ of water; but on our shores it is not greater than 1 of salt to about 30 of water. Sea-water on the British coast contains, in the wine pint, about 186,5 grains of muriate of soda; of muriate of magnesia 51 grains; of selenite 6 grains; the total being 243½ grains, or half an ounce and 3½ grains of saline contents.

The disorders for which the internal use of sea-water has been, and may be resorted to, are those in which moderate relaxation of the bowels is useful. Citizens, whose sedentary and inactive employments have rendered them dyspeptic and constipated, may doubtless occasionally be benefited by an excursion to the coast, and drinking of this water for some days, so as to promote such moderate relaxation of the intestinal tube. But, however, although in such cases it may occasionally be of service, we advise no reliance upon it in serious disorders: for most commonly disappointment will be the result. The dose may be from four to eight fluid-ounces, or more. See Bath, and Salt.

For an effectual method of *distilling sea-water* on ship-board, see Distillation.

SEA-WRACK, or *Fucus*, a genus of marine plants, growing on rocks and other bodies which are either constantly, or very often, covered by the sea. One hundred and forty-six species have been enumerated. Many of them are composed of branches, consisting of numerous oblong vesicles, or little bladders, sometimes filled with a thick gelatinous or mucous fluid. Their colour, for the most part, when growing, is dark olive or black; when dead and dry, the whole tribe appears of a black colour, and is known in this country under the name of *kelp*. See Kelp. Eighty species are common to the coasts of our own country; the following are those only which we can enumerate.

The *Palmatus*, or Palmated fucus, frequent on the coasts of Scotland; often eaten both raw and boiled; it contains much alkali, a considerable portion of sugar, and a large quantity of mucus. The *natans*, or Floating fucus. The *serratus*, or Serrated sea-wrack, or fucus. The *vesiculosus*, Common, or Bladder sea-wrack. It is used as a manure on the sea coasts of Scotland; and in the Scottish islands it serves also as food for cattle; it is mucous and saccharine; in Sweden it is used for fuel and thatch. It affords a great quantity of alkali when burnt. The *prolifer*, or Proliferous sea-wrack. The *saccharinus*, Sweet fucus, Sugar sea-wrack, or Sea-belt; in Iceland used as an esculent. The *ciliatus*, or Ciliate fucus; eaten by the Irish and Scots. The *pinnatifidus*, or Pepper-dilse, eaten also in Scotland. The *esculentus*, or Eatable sea-wrack, Tangle, or Bladder locks, is more commonly eaten both by man and beast than any other of the species. The *plicatus*, Matted, Implicated, or Indian grass fucus, in colour, when exposed to the air, like the Indian grass used by anglers. The *spiralis*, or Spiral fucus. The *membranaceus*, or Pellucid fucus. The *articulatus*, or Jointed fucus. The *confervoides*, or Warty fucus. One of the broad-leaved dichotomous species is called sea-oak. See Husbandry, and Manure.

Sea Wolf. See Seal, and Wolf

SEAL, or *Phoca*, a genus of amphibious, mammalian quadrupeds, consisting of nineteen species. They are a dirty, curious, quarrelsome tribe, easily tamed, and polygamous; flesh succulent, tender; fat and skin useful; they inhabit and swim under water, and crawl on land with difficulty, because of their retracted fore-feet and united hind feet; feed on fishes and marine productions; and are said to swallow stones to prevent hunger by distending the stomach. The following are the chief:

The *Vitulina*, or Sea calf; head without neck, smooth, flat; body brown, dusky, brindled or spotted with white or yellow; eyes large, black; large whiskers; tongue forked at the end; six cutting teeth in the upper jaw, four in the lower; tail short; usual length of the body from five to six feet; inhabits most quarters of the globe, but in greatest numbers towards the north and south; found also in the Caspian sea, in the lakes Aral, Baikal, and Oron; those in fresh-water lakes, smaller than those which frequent salt-water. They bring forth two young at a time, and suckle them in caverns till they are six or seven weeks old, when they take them to sea. They cannot continue long under water; in summer they sleep on rocks, and on sand-banks; if surprized, they hasten to the sea; if at a distance from it, they scramble along, and fling up the sand and small stones with their hind feet, making a piteous moaning: if overtaken, they offer a vigorous defence with their feet and teeth. A slight blow on the nose kills them, otherwise they will bear a multitude of wounds; they swim with great strength and swiftness, and frolic greatly in their element; but they never go a great distance from land; they feed on all sorts of fishes, and are themselves occasionally eaten by voyagers; but they are generally killed for their oil and skins: a young seal will yield eight gallons of oil; the skins are brought home packed in casks, with layers of rough salt strewed between each skin. Seals are the wealth of the Greenlander, supplying him with every necessary of life. They are found occasionally on our own coasts. They have been rendered so tame as to follow a boat in the water, like a dog. This species is the phoca of the Roman writers.

The *mutica*, or Long-necked seal, has a slender body, fore feet resembling fins, and having no claws. The *australis*, or Falkland Isles seal, is about four feet long; ears short and pointed; hair ash colour, tipped with dirty white, found also in New Zealand. The *testudo*, or Tortoise seal, has a head resembling a tortoise: found on the shores of Europe; but little known. The *fasciata*, or Ribbon seal, has short, fine bristly hair, almost black, marked along the sides, and other parts with a stripe of a pale yellow colour, resembling a ribbon; inhabits the Kurile islands. The *laniger*, or Leporine seal, is covered with soft hair-like fur, of a dirty white colour; about six feet and a half long: greatest circumference five feet ten inches; inhabits the White sea during summer; found also off Iceland and Spitzbergen. The *barbata*, or Great seal, grows to the length of twelve feet; body blackish; inhabits the north of Scotland, and the south of Greenland. The *hispida*, or Rough seal, has the body covered with pale brown bristly hairs, intermixed like that of a hog; inhabits Greenland; the natives of which country make garments of the skin, turning the hairy side inwards. The *monachus*, or Hooded seal, has the hair whitish grey, with a thick coat of black wool under it, hence it appears of a fine grey; it has a strong folded skin on its forehead, which it can fling over its eyes and nose; inhabits only the south of Greenland and Newfoundland. The *Groenlandica*, or Harp seal, has a pointed head, and thick body; colour whitish grey, having on the sides two black crescents, the horns upwards, towards each other; it attains these marks only in its fifth year; till which period it changes its colour annually, and is called each year by different names; it is the most valuable of the seal tribe, both for its skin and oil; length nine feet; inhabits Greenland, Newfoundland, Iceland, the White sea, Frozen ocean, and passes through the Asiatic strait, as far as Kamschatka. The *pusilla*, or Little seal, is about two feet four inches long, is dusky on the head and back, brownish beneath.

The *Ursina*, Sea-bear, or ursine seal, has the head with external ears; male greatly superior to the female in size; the length of some males is eight feet; in circumference five; weighs 800 pounds; hair long and rough, with a soft down of bay colour beneath; their general colour is black, but the hair of the old ones is tipt with grey. The females are cinereous. The nose projects like that of a pug dog, but the head rises suddenly; the teeth are thirty-six, which lock into each other, when the mouth is closed; eyes large and prominent; they may be covered at pleasure with a fleshy membrane. The length of the fore legs twenty-four inches, and not immersed in the body as other seals; hind legs twenty-two inches long, fixed to the body, but capable of being brought forward. Their feet are divided each into five toes, connected with a web a foot broad; tail only two inches long. They live in families, each male has from eight to fifty females, whom he guards with the jealousy of an eastern monarch; and though they lie by thousands on the shores, each family keeps itself separate from the rest. The whole tribe are extremely fierce. The males are very fond of their young, but very tyrannical towards the females; they both shed tears plentifully when aggrieved. They swim very swiftly, and can continue a long while under water.

There are three marine animals which appear to keep a particular situation: these are what are called the sea-lion, the sea-bear, and the manate (see Morse), and seem divided between the N. E. of Asia, and the N. W. of America; they are confined to the narrow seas between lat. 50 and 56; they are also common to New Zealand, Staten Island, and the Falkland Islands.

The ursine seals, during the three summer months, lead a most indolent life, confining themselves for whole weeks to one spot, and sleeping a great part of the time, eat nothing, and, except the employment of the females in suckling their young, are totally inactive. They are previously to this period, however, extremely fat. The skins of the young ones cut out of their dams, are very useful for clothing; the fat and flesh of the old males are very nauseous; but that of the females resembles lamb; the young ones roasted are as good as sucking pigs.

The *Leonina*, Bottle-nosed seal, sea-lion, or sea-wolf, has the head crested on the fore part; snout of the male projecting five or six inches below the lower jaw; the upper part, a loose wrinkled skin, which the animal, when angry, has the power of blowing up so as to give the nose an arched appearance; feet short, dusky; eyes large; great whiskers; short dun hair on the body: that on the neck a little longer; skin very thick; old males twenty feet in length, and fifteen in circumference. Female covered with short rusty-coloured hair; length twelve feet, circumference two and a half; flesh eatable; they assemble in families like the last species: during the breeding season they abstain from food, and before that is elapsed, they become very lean. They feed at other times on fishes and smaller seals. They inhabit the Seas of New Zealand, Juan Fernandez, and the Falkland Islands; one of these animals has been known to yield a butt of oil, and its blood to fill two hogsheads.

The skins of several of these species are tanned for leather, which is extensively used for shoes, &c. The wool or fur of the skins is used for making hats, and the oil for various purposes in the arts.

Seal, *Solomon's*. See Solomon Seal.

SEALING-WAX, a composition consisting of various ingredients, used chiefly for sealing letters. The following are some of the most approved forms for the composition of this article.

Red sealing-wax. Take of camphire eight ounces; of shell lac eight pounds; of Venice turpentine four pounds; of vermilion two pounds and a half; of rectified spirit of wine two pints. Dissolve the camphire first in the rectified spirit of wine, in a suitable vessel over a slow fire, taking care that no flame touches the evaporating spirit: then add the shell lac; and when that has become a uniform and smooth mass, by a moderate application of heat, add the Venice turpentine, and lastly the vermilion; which should be passed through a hair sieve held over the melted mass, in order that it may not get into clots. When the whole is well incorporated, it will be ready to form into sticks of whatever size may be desired: to do this, the soft wax is weighed out and rolled with a piece of mahogany, on a smooth mahogany table, to the proper length, and then flattened by mere pressure. To make it shine, a charcoal fire must be provided in a chaffing dish, and the stick is to be held for a short time over the fire, then passed over a bit of mutton suet, or candle-tallow, and rubbed with a piece of soft leather. The stick is marked by heating it and then pressing on the stamp. A variety of inferior kinds of sealing wax may be made by using less shell lac, camphire, and vermilion, and supplying their places by yellow resin, and red lead. The addition of the camphire is to make the wax burn well.

Black sealing-wax. Take of camphire two ounces; of shell lac five pounds; of black resin three pounds; of oil of turpentine one pint, of rectified spirit of wine one pint; of lamp-black eight ounces. Dissolve the camphire in the rectified spirit of wine, then add the shell lac, to which pour the resin previously melted and mixed with the oil of turpentine, taking care in both instances that no flame touches the melting materials, and using also a moderate heat. Lastly, mix in the lamp-black in the same manner as directed for vermilion in the making of red sealing-wax; and, after all is uniformly incorporated, form sticks in the same manner as directed for red sealing-wax. An inferior black sealing-wax may be made by adding more resin and turpentine, and less shell lac and camphire.

An *uncoloured soft sealing-wax* may be prepared by melting one pound of bees-wax, three ounces of horse-turpentine, and one ounce of olive-oil together; this may be made of almost any colour, by adding the proper colouring ingredients. Its chief use is for receiving the impressions of seals of office to charters, patents, &c.

SECHIUM, a genus of plants, consisting of one species only, the *sechirun edule*, or Chocovine, a West Indian plant, climbing like the cucumber tribe. The fruit is boiled and served up at table like spinach; the root of the old vine is used as a yam, and, on being boiled, has a farinaceous, and not unpleasant taste.

SECRETION, a function by which different organs separate from the blood, substances destined for particular uses; as the bile in the liver, saliva in the mouth, &c. See NUTRITION, PERSPIRATION, &c.

Sedan chair. See CHAIR.

SEDATIVES, those medicines which diminish the animal energy without destroying life.

SEDGE, SEDGE-GRASS, or *Carex*, a genus of plants, comprehending ninety-nine species, natives of Europe and America: the greater number, of the sands, marshy pastures, &c. of our own country. They may be arranged in sections thus: with spike, solitary, simple—with spike compound, androgynous—with male and female flowers on distinct spikes—with male and female spikes distinct; females peduncled—with male and female spikes distinct; males several. The common sedge is very generally known, and the other species are not essentially different. The *arenaria*, found on the sands of this country, is the *sarsaparilla germanica* of the dispensatories.

SEDLITZ, SEIDLITZ, or SEYDSCHUTZ WATER, is obtained from two springs near a village of that name in Bohemia; it is strongly impregnated with sulphate of magnesia, and contains besides a small quantity of carbonate and muriatic magnesia. It is purgative, and recommended in dyspepsia, hypochondriasis, amenorrhœa, piles, scorbutic eruptions, &c. The dose is from half a pint to a pint. It is frequently made artificially in this country. See MINERAL WATERS, and QUACK MEDICINES.

SEDUM, ORPINE, STONE-CROP, LIVE-LONG, or LIVE-EVER, a genus of plants comprehending twenty-nine species, chiefly natives of the Levant, Spain, and Portugal; nine common to the hedges, wet rocks, dry sands, or walls of our own country. The following are those generally cultivated: the *telephium*, or Orpine, the *anacompseros*, or Evergreen, the *aizoon*, or Yellow, the *populifolium*, or Poplar-leaved, the *stellatum*, or Starry, the *cepæa*, or Purslane-leaved, the *dosyphyllum*, or Thick-leaved, the *reflexum*, or Recumbent, the *rupestre*, or Rock, the *Hispanicum*, or Spanish, the *album*, or White, the *acre*, Wall-pepper, or biting, the *sexangule*, or Insipid, the *Anglicum*, English, or mild white, and the *annuum*, or Annual stone-crop.

They are all hardy, herbaceous, succulent perennials in the root, though most of them annual in the stalk, which, rising in the spring, flowers in June, July, and August; the flowers consisting universally of five spreading petals, generally crowning the stalks numerously in corymbs, cymes, and spikes. They are propagated either by seeds, by parting the roots, by slips, or cuttings. As flowering plants, they are mostly employed to embellish rock-work and ruins; the roots being surrounded, at first, with a little mud, after which they will readily shoot into the adjoining crevices.

Two or three of the species are employed in Holland, as salads. The wall-pepper is extremely acrid, and was formerly in the materia medica, but modern medicine takes no notice of it. If taken in large doses, it is both emetic and cathartic; applied to the skin, it produces both vesications and erosions. It is said, notwithstanding these properties, that a decoction of this plant is not only safe, but efficacious, in scorbutic complaints; it has also been recommended in scrofula and cancer.

SEED, in botany, the rudiment, or embryo of the new plant; it is analogous to the egg in animals. A seed consists essentially, of the *cotyledon*, the *plume*, and the *radicle*. The cotyledon contains the matter necessary for the early nutrition of the young plant. Sometimes it is single, sometimes double, and, sometimes divisible into several lobes. The plume afterwards produces the stem and leaves, and is enveloped by the cotyledons. The radicle generally projects a little, and when the seed vegetates, it becomes the root. These parts are usually enveloped in a common membrane, and are well seen in the garden bean.

In the *choice of seeds*, the most healthy stalks or stems, of the plants which bear them, should always be selected. The time for gathering them is when they are perfectly ripe, which is to be ascertained generally, by the dryness of the stem, and, sometimes, by the dryness of the seeds themselves.

The most simple mode of *preserving seeds* consists in secluding them from light, heat, and air, in the bowels of the earth, where they will retain their vegetative power for several years, not to say ages. Where perishable seeds are to be carried, or brought from distant places, it has been found useful to cover them with a thin coating, consisting of a mixture of pitch, resin, and bees-wax. Sugar is also a convenient vehicle for conveying seeds from a distance. Powdered charcoal has also been recommended for the preservation of seeds.

Seed lac. See LAC.

SELAGO, a genus of plants consisting of twenty species, all natives of the Cape. The following are cultivated; the *corymbosa*, or Fine-leaved selago, rising with a slender stem, requiring support, seven or eight feet high, with small white flowers, appearing in July and August. The *spuria*, or Linear-leaved selago, is a biennial, flowering in June. The *ovata*, or Ovate-headed selago, having white flowers, with a yellow spot on the two upper segments, sometimes on all of them, and an orange spot on the mouth of the tube; very fragrant; flowers in June and July. These may be increased by cuttings or layers, and are treated afterwards, as the hardier kind of green-house plants.

SELENITE, sulphate of lime, in a crystallized state. See GYPSUM.

SELENIUM, a body arranged rather from analogy, than experiment among the metals. It is of a grey colour, and of a bright metallic lustre. It fuses at a few degrees above the boiling point of water, and when slowly cooled, assumes a granular fracture. It boils and evaporates in close vessels at a temperature a little below redness. Heated before the blow-pipe, it volatilizes with a very powerful and peculiar smell, somewhat like that of horse-radish. It unites with the metals, and with the fixed alkalies; with nitric acid it forms a volatile and crystallizable compound, called selenic-acid, which unites with some of the metallic oxides, producing a distinct class of *seleniates*.

SELF-HEAL, or *Prunella*, a genus comprising three species, European plants; one, the *vulgăris*, found wild in our own pastures, which is eaten by cattle, and may be boiled and eaten as spinach.

Self-Murder. See SUICIDE.

SELF-LOVE, or SELFISHNESS, that disposition or state of the mind, which disposes us to consider and prefer always our own individual comforts and happiness before those of any other being.

What we have said relative to ambition and genius we may repeat here, if possible, with more intensity. Self-love appears to be inseparable from our nature, and, therefore, when kept within proper bounds, is meritorious; but that self-love which prompts us to obtain comforts and happiness by infringing on the rights, comforts, or happiness, of others, regardless of the moral fitness of things, is vicious, and should be suppressed. The whole routine of moral conduct, it cannot be too often repeated, consists of imperious *duties*, relative to the performance of which, we have no capricious choice—*they ought to be performed.* One of the first of our duties is to take care that self-love does not tempt us to obtain what we desire, by trenching on the rights, comforts, or happiness, of others, regardless of the moral fitness of things; or in other words, regardless of virtue and of justice. Were a proper attention paid to this duty, self-love and selfishness would soon cease to produce that overwhelming mischief of which, at present, they are often the fruitful parents.

SELTZER-WATER, a mineral water obtained from the springs which rise in the vicinity of *Nieder-selters*, in Germany. It is slightly alkaline, and highly impregnated with carbonic acid. It is used in a variety of complaints: in slow hectic fever, exanthematous eruptions of the skin, foulness of the stomach, bilious vomiting, acidity, and heart-burn, &c. In calculous complaints, and diseases of the urinary organs, &c. The usual dose is from half a pint to a pint. It is frequently made artificially in this country. See MINERAL WATERS.

An artificial Seltzer-water is made thus: Take of common salt one drachm; of carbonate of magnesia one scruple; of subcarbonate of soda fifteen grains; of chalk seven grains; water three pints. Impregnate it with the carbonic acid gas, obtained from six drachms of marble powder, mixed with six drachms of sulphuric-acid.

SEMOLINA, a nutricious preparation consisting of granulated wheat. Semolina is supposed to be a wholesome food, but is little heard of in this country.

Senegal-gum. See GUM ARABIC.

Seneka or senega. See RATTLE-SNAKE-ROOT.

Sengreen. See HOUSE-LEEK.

SENNA, or *Folia cassiæ sennæ*, the leaves of a species of Cassia, an annual plant, a native of Upper Egypt. The best grows in the valley of Basabras, in Nubia, flowering in July and August. It rises with an erect branching stem, about two feet in height; the leaves are pinnate; leaflets sessile, oblique, oval, pointed, and scarcely an inch in length, and, when dried, of a yellowish green colour; the flowers are yellow. The fruit is an ovate, uniform, membranous, leafy, compressed pod.

The best senna is said to grow wild, and yields two crops of leaves, the first is collected about the middle of September; the second the following March. The plants are cut when the flowers begin to fall, and exposed on the rocks to dry in the sun. The leaves are then picked, packed up in bales, and sent to Boulac, where they are mixed with two other species of cassia; but the leaf, with which senna is chiefly adulterated, is that of the *cynanchum oleæfolium*, known in Egypt by the name of argel or arguel. The two first are good but the last is a base adulteration. This adulteration may be discovered thus; the leaf of argel is an inch or 14 lines in length; that of senna never exceeds nine lines; the leaf of argel has a straight side, the lateral nerves not being seen on the uncer disk, whilst those of senna are conspicuous; the leaf of argel is regular at its base, the two sides terminating at the same point on the petiole; the senna leaflet is oblique, on one of the sides being larger, and produced lower on the petiole than the other. There is reason also for believing that senna is further adulterated with the leaves of bladder senna and of box, but these are easily distinguished; the senna is repacked in bales at Alexandria whence it is exported to Europe.

The odour of senna leaves is faint, rather disagreeable and sickly; the taste slightly bitter, aromatic, sweetish and nauseous. Boiling water extracts about one-third of the weight of the leaves employed. The active principle appears to be a very oxydizable extractive resin, and a peculiar volatile matter; it contains also mucus and some saline ingredients. Its use as a medicine consists in its purgative qualities; and, where the bowels require to be certainly, yet moderately evacuated, it is well adapted for this purpose, generally operating in less than four hours after it is taken. It sometimes occasions griping; and it then requires the addition of some aromatic, such as caraway seeds, cardamoms, or ginger; its operations should be assisted by drinking plentifully of weak broth, or gruel. It may be also given in substance; but the more usual form is infusion, as the activity of the medicine is said to be impaired by boiling; although from our own experience, we can say, that we have found a *decoction* of senna very efficacious in relaxing the constipated bowels of children. The dose of the powdered leaves of senna is from one scruple to a drachm. The following are the principal preparations of this drug.

Confection of Senna. See CONFECTION.

Infusion of Senna. Take of senna leaves one ounce and a half; of ginger-root sliced, one drachm, boiling water a pint. Macerate for an hour, in a slightly-covered vessel and strain. It should be kept in a closely-stopped bottle. It is given alone, or more commonly combined with neutral salts, or manna. The dose may be from three to four fluidounces; but with the addition of one drachm of tartrate of potash, or three drachms of sulphate of magnesia, two fluidrachms are sufficient.

Tincture of Senna. Take of senna leaves three ounces; of caraway-seeds bruised, three drachms; of cardamom-seeds bruised, a drachm; raisins stoned, four ounces; of proof spirit two pints. Macerate for fourteen days in a gentle heat, then press and filter. This tincture is stomachic and purgative; it is useful in flatulent colic, atonic gout, and as an opening medicine, to those whose bowels have been injured by intemperance. The dose is from two fluidrachms to one fluidounce, in any convenient vehicle.

Daffy's Elixir, is also a useful preparation of senna, &c. See DAFFY'S ELIXIR.

Senna, Bladder. See BLADDER SENNA.

Senna Scorpion. See BLADDER SENNA.

SENSATION, the perception of external objects by means of the senses. Sensation or feeling is the consciousness of a change taking place in any part from the contact of a foreign body with the extremities of our nerves; the seat of sensation is in the pulp of the nerves. Sensation may also be produced by various motions or changes within ourselves, without the presence of a foreign body.

The impression produced on any organ by the action of an external body, constitutes sensation. This sensation, transmitted by the nerves to the brain, is perceived, that is, felt by this organ; the sensation then becomes *perception*; and this first modification implies the existence of a central organ, to which impressions produced on the senses are conveyed. In proportion as a sensation, or an idea, which is only a sensation transformed or perceived by the brain, has produced in the fibres of this organ a stronger or weaker impression, the *remembrance* of it becomes more or less lively and permanent. In other words, upon given occasions, and under suitable circumstances, a repetition of the effect produced by sensation takes place in the brain, and often without the presence of the object which originally produced it. A series of these repetitions constitutes what we call *memory*. In this manner originate, for the most part, all the rest of the complex processes of the mind. See Mind.

SENSE, or Senses, the faculty or power by which external objects are perceived: the sight, touch, or feeling, hearing, smell, and taste, are called the senses.

SENSE, Common, a term supposed to be understood by every one, but, perhaps, one of the most indefinite terms in language. The same observations may be applied to this expression, as to *reason* and *conscience*. See those articles. It is a sense which persons who have mixed much with mankind, often plume themselves upon possessing; in which acceptation it means, most usually, a knowledge of succeeding in the world by humouring the prejudices or avoiding collision with the opinions of the multitude; it is also sometimes dignified with the name of *prudence*. He, however, who determines to pursue the straight forward path of duty, will very often find himself opposed to such common sense. In such situations, our patience, forbearance, temper, and *good sense*, ought to be actively engaged.

SENSIBILITY, the capability which a nerve possesses of conveying the sensation produced by the contact of another body with it. It also implies a mental state of feeling, in which the mind is liable to be acted upon with greater or less intensity.

SENSITIVE PLANT, or *Mimosa*, a genus of plants, comprehending eighty-five species, scattered over the warmer climates of the globe. They may be subdivided into leaves simple,—leaves simply pinnate,—leaves bigeminate or tergeminate,—leaves conjugate and also pinnate,—leaves doubly pinnate: this last subdivision includes more than half the genus, which is composed of trees, shrubs, and under-shrubs: the following are most worthy of note:

The *Sensitiva*, or Common sensitive plant, is prickly; partial leaflets two pair; the innermost very small; flowers purple, succeeded by flat-jointed pods; the leaves and foot stalks recede from the touch; a native of Brazil.

The *Pudica*, Bashful sensitive plant, or Humble plant, is prickly; leaves somewhat digitate; stem bristly; peculiarly sensitive to the approach of the hand, both in stalk and leaves; a native of Brazil.

The *Viva*, or Lively mimosa, is unarmed; partial leaflets four pair, roundish; stem herbaceous, unarmed; retains the letters or name of a person for several minutes after such letters have been run over the leaves with a stick; a native of Jamaica.

The *Scandens*, Cacoons, or Mafotoo wyth, is unarmed; leaves ending in a tendril; leaflets two pair; its pod is eight or nine feet long, the largest and longest in botany, containing from ten to fifteen seeds.

The *Inga*, or Inga tree.

The *Catechu*, with stipular spines, has the leaves many pair. A native of India. From this plant is obtained the catechu, or Japan earth of the shops. See Catechu.

The *Nilotica* has stipular spreading spines; outer partial leaves separated by a gland; spikes globular, peduncled; a native tree of Arabia, about fifteen feet high, with a lupin-like pod, containing flattish brown seeds. From the branches and stems exudes the gum arabic of the shops. See Gum Arabic.

The *Senegal* has the spines in threes, the middle ones reflected; flowers in spikes; a native of Arabia and Africa. The gum Senegal exudes from it. See Gum Arabic.

The three last species are strictly acacias; the nilotic mimosa is the true acacia, or Egyptian thorn. See Acacia. But this genus, in the Linnean system, comprehends the *acacia*, the *inga*, and *mimosa* tribes of other authors.

Acacias are propagated by sowing their seeds in a hot-bed in the spring; as soon as they appear above the ground, they must be transplanted into pots plunged into another hot-bed. The first and second winter they should be sheltered in a common hot-bed frame; after which they may be transplanted in the open ground in a sheltered spot. They love a loose and somewhat moist soil. The tenderest acacias will require a hot-bed, or at least a hot-house in the winter, till they are four or five years old.

The *Inga* may be propagated by seeds in the manner directed for acacias; they always require a stove.

The sensitive plants, or the mimosas, strictly so called, may be propagated by seeds, in the same manner as the inga and other natives of warm climates. They require, except in very warm weather, a stove.

The sensitive plant is so named from its remarkable property of receding from the touch or pressure, and giving signs, as it were, of animal life. If the touch or pressure on the plant be very powerful, the leaves not only fold together, but the leaf, stalk, and branches become affected, and incline to the main stem, so that the whole plant becomes for a time, from a complexed branched figure, a sort of straight cylindrical one.

The *humble plant* particularly attracted the notice of DARWIN, which he thus describes:

Weak with nice sense the chaste mimosa stands,
From each rude touch withdraws her timid hands;
Oft as light clouds o'erpass the summer glade,
Alarm'd she trembles at the moving shade;
And feels alive through all her tender form,
The whisper'd murmurs of the gathering storm;
Shuts her sweet eyelids to approaching night,
And hails with freshened charms the rising light.

SEPTUM, in anatomy, a partition or division in an organ: *septum cordis*, is the partition between the two ventricles of the heart; *septum narium*, is the partition between the nostrils; and *septum thoracis*, the mediastinum, &c. &c.

SERGE, in commerce, a woollen stuff, manufactured in a loom of which there are various kinds, denominated either from their different qualities, or from the places where they are made. The distinguishing characteristic of serge is its being kersey-wove.

SERPENT, in zoology, an order of amphibious animals, consisting of six genera, viz. the *crotalus*, or Rattle snake; the *boa*; the *coluber*, or Viper; the *anguis*, or Snake; the *amphisbæna*, and the *cæcilia*. They are thus characterized: footless; eggs connected in a chain; jaws dilatable; œsophagus so large that they can swallow, without mastication, an animal immensely larger in size than themselves. Colour variable; tongue filiform, bifid; skin reticulate. They are cast upon the earth naked, without limbs, exposed to every injury, but frequently armed with a poison the most deadly and horrible: this is contained in tubular fangs resembling teeth, placed without the upper jaw, protruded or retracted at pleasure, and surrounded with a glandular vesicle, by which their fatal fluid is secreted. A fifth part only of this tribe are, however, armed with poison. We shall treat of all the genera here, as being the most convenient method.

The CROTALUS, or Rattle-snake, is a genus of serpents, comprehending five species, distinguished by having plates on the belly; plates and scales under the tail, and terminated by *a rattle*. The whole of this tribe is furnished with poisonous fangs. They seldom bite, except when irritated, or for the purpose of securing their prey. They are said, also, to possess the power of fascination: and the fact of small birds, squirrels, &c., descending from the branches of the tree under which the rattle-snake lies, and are devoured by it, is asserted upon respectable authority, whence the cause has never been satisfactorily explained. There are five species of this genus, as follow:

The *Milliarius*, having thirteen abdominal, and thirty-one dorsal, plates; cinereous, with a triple row of black spots; a red spot between the dorsal ones; inhabits Carolina.

The *Horridus*, or Banded rattle-snake, has one hundred and sixty-seven abdominal plates; dorsal twenty-three; body covered with triangular brown spots, the most venemous of the serpent tribe; grows to nearly six feet long, and as thick as a man's arm; is eaten by swine without injury; preys on birds and smaller quadrupeds; inhabits America. Said to receive its young into its mouth and swallow them in time of danger. It is viviparous, producing in June generally about twelve in number. The rattle consists of hollow, hard, dry, and semi-transparent bones, nearly of the same size and figure, resembling in some measure the human os sacrum. The number of the joints in the rattle, varies in different snakes, from five to twelve, fifteen, twenty, and some have been found with even forty. The poisonous secretion is discharged from the fangs of the dog teeth, or tusks in the upper jaw, after the manner of the viper. After the first bite, the animal appears progressively to lose its power of poisoning till it has had time to recruit itself by a respite of some hours: so that the second bite, if given immediately after the first, does not prove so soon fatal, the third still less so, and sometimes the fourth not at all. For the treatment of the bite of this animal, see the conclusion of this article.

The *Dryinas,* or Wood rattle-snake, has the abdomen with a hundred and sixty-five plates; dorsal thirty; whitish with yellow spots; inhabits America.

The *Durissimus,* or Striped rattle-snake, has the abdomen with one hundred and seventy-two plates; dorsal twenty-one; from one and a half to four feet long; body mixed, white and yellow, with black rhombic spots, white on the disk: two other varieties; one with two black bands on the head and neck; generally found under the trunks of fallen trees; inhabits America.

The *Mutus,* or Dumb rattle-snake, has the plates of the body two hundred and seventeen; of the tail thirty-four; is very large, and has vast fangs, back marked with black concatenate spots; a black line behind the eyes; instead of a rattle, a quadruple row of very minute sharp scales.

The Boa is a genus, consisting of eighteen species, natives of India or America, some of Africa. Several of this genus are of an enormous size, being found occasionally twenty, thirty, or even thirty-five feet in length, and of a strength, so as to be able to destroy cattle, deer, and other animals, by wreathing round and crushing them to death: after which they swallow them whole, and when the process of swallowing is effected, they become torpid; in which state they may easily be destroyed. The following are the species of this genus most worthy of notice.

The *Constrictor* has about two hundred and forty plates of the belly; of the tail forty-six. It is most beautifully variegated with rhombic spots; belly whitish; of prodigious size and strength, measuring sometimes twelve yards. It twists itself round the bodies of gazelles, leopards, and other large quadrupeds, and after covering them with a slimy mucus, gradually swallows them; inhabits the woody and marshy regions of India, and the warm parts of America.

The *Scytale,* or Spotted boa, has the plates of the belly two hundred and fifty; of the tail seventy; preys on frogs, lizards, sheep, goats, and deer; rather inferior in size to the last; inhabits America; eaten by the natives. The *cenchris,* or Ringed boa, has the plates of the belly two hundred and fifty-six; of the tail fifty-seven; colour greenish, with ocellate spots: less than either of the former; inhabits chiefly Surinam. The *enydris,* or Water boa, has the plates of the belly two hundred and seventy; of the tail a hundred and five; colour grey variegated; lower teeth long; inhabits America. The *oprias,* or Brown boa, has the plates of the belly two hundred and eighty-one; of the tail eighty-four; body brown; in appearance and habit like the *constrictor.* The *canina,* or Canine boa, has the plates of the belly two hundred and three; of the tail seventy-seven; body green, with transverse white bands; belly white; four feet long; inhabits America. The *hortulana,* or Garden boa, has the plates of the belly two hundred and ninety; of the tail twenty-eight; colour pale, with livid, wedged spots; elegant, slender, not many feet in length; inhabits America. The *murina,* or Rat boa, has the plates of the belly two hundred and fifty-four; of the tail sixty-five; colour glaucous, with round black spots; inhabits America. The *fasciata*, or Fasciated boa, has the plates of the belly two hundred and thirty-three; of the tail thirty-six; of a yellow colour, marked with numerous, dusky, blue, transverse bands; inhabits India, especially Bengal. The bite of this snake is poisonous in a high degree.

A curious account of a serpent swallowing two goats is given by Mr. Clarke Abel, in his *Narrative of a Journey in the interior of China, &c.* to which we can merely refer.

The Coluber, or Viper genus, consists of one hundred and seventy-five species. The tail scales, although placed alternately, are reckoned by pairs, so that the number marked in relation to the respective species is always to be understood as meaning so many pairs. The following are most worthy of notice:

The *Berus*, or Common viper, has the plates of the belly a hundred and forty-six; scales of the tail thirty-nine; body cinereous, or, which is probably the male, tawny-brown or blackish; a dark indented stripe along the middle of the back, or dark brown; belly tinged with purple, spotted with black; throat pale; irids orange; pupil black. Viviparous, bringing usually from ten to fifteen young at a time. Four other varieties in India and St. Eustace. Inhabits Europe and Siberia; lives in woods and thickets, and, in breeding time, in the open fields; is poisonous; sometimes fatally so; grows to eighteen inches long; flesh formerly used medicinally; but now expunged from the materia medica. The poisonous matter is a real gum. For the cure of the bite of a viper, see the conclusion of this article. It is said that the young of this tribe run down the throat of the mother in time of danger.

The *Cerastes*, or Horned viper, has the plates of the belly a hundred and fifty; scales of the tail twenty-five; above the eyes a pair of horns or curved process pointing forwards; from a foot to a foot and a half long; colour rusty brown, with darker spots; belly blueish; springs suddenly to a considerable distance, and bites, without provocation, those who approach it; inhabits the East, Arabia, and Africa. Probably the aspic employed by Cleopatra.

The *Chersea* has the plates of the belly a hundred and fifty; scales of the tail thirty-four; nine and a half inches long; less than the berus, and of a much deeper bay; inhabits Sweden; its bite often speedily fatal.

The *Lebetinus* has the plates of the belly a hundred and fifty-five; scales of the tail forty-six; about a foot and a half long; colour above grey, with four rows of transverse spots; beneath whitish, varied with thick black or brown dots. Inhabits the east, and destroys the person bitten by producing an unconquerable and deadly sleep.

The *Natrix*, or Ringed snake, has the plates of the belly a hundred and seventy; scales of the tail sixty; body above blackish, with a white spot on each side of the neck; back subcarinate; beneath white, sometimes yellowish or brownish, with a longitudinal, irregular, broadish black stripe down the middle; three feet nine inches long. Five other varieties, differing chiefly in colour, spot, and stripe; it is harmless; inhabits Europe; lives in hedges, shrubberies, or old buildings; deposits its eggs, which are connected in a mass by mucus, in dung heaps, or under rotten trees. All these species cast their scales in the spring. These snakes are frequently tamed.

The *Naja*, Cobra de Capella, spectacle, or Hooded snake, has the plates of the belly a hundred and ninety-three; scales of the tail sixty; colour rusty yellow, with the neck generally much dilated, and marked above with a spectacle-shaped spot of black and white. Three other varieties, differing only in colour or spotting; from three to four feet long. The most venemous of its tribe, and hardly inferior to the rattle-snake in the malignity of its poison; inhabits the Ternate islands and India; in the latter place it is carried about as a public shew, and dances to the sound of musical instruments, being first deprived of its fangs. When viewed in front, in an irritated state, or when about to bite, it bends its head rather downwards, which then appears as if hooded, from the expanded skin of the neck.

The *Dione* has the plates of the belly a hundred and ninety; scales of the tail sixty-six; back delicate blue, or whitish, with whiter streaks; belly whitish, with minute livid brown spots or reddish specks; slender and elegant, about three feet long; inhabits near the Caspian sea and the Irtish. The *Constrictor* has the plates of the belly a hundred and eighty-six; scales of the tail twenty-nine; black, beneath pale blue, throat white; is not poisonous; inhabits North America. The *Caspius* has the plates of the belly a hundred and ninety-eight; scales of the tail a hundred; five feet long; above banded with yellow and brown; beneath yellow. Inhabits the shores of the Caspian. The *Aspis*, or Asp, has the plates of the belly a hundred and forty-six; scales of the tail forty-six; nose terminated by an erect wort: body tawny, with figured streaks; beneath steel-blue dotted with yellow; inhabits the southern parts of France; suspected to be a variety of the *berus*.

The *Aquaticus*, Water-viper, or Water rattle-snake, is brown: the belly banded with black and yellow; tail terminating in a blunt horny point; frequents the water, and is never seen at any great distance from it; the fang bite said to be as fatal as the rattle-snake; lives in summer gregariously, on the branches of trees, hanging over rivers, watching to surprise either fishes or birds, upon which they plunge with great swiftness; a native of Carolina, and other parts of North America.

The genus Anguis, or Snake, consists of twenty-six species, of which the following are the chief:

The *Scytala* has the scales of the belly two hundred and forty; of the tail thirteen; colour varying, generally orange with black blotches; sometimes black and white, sometimes pale rose and black, &c. Inhabits South America and India.

The *Eryx*, or Aberdeenshire snake, has the scales of the belly one hundred and twenty-six; of the tail one hundred and thirty-six: above cinereous with three black lines the whole length; beneath lead-colour, with white spots; inhabits America and England.

The *Fragilis*, or Blind-worm; see Blind-worm.

The Amphisbæna comprehends five species; they are characterised by rings on the body and tail; no scales; body smooth, equal, cylindric; tail scarcely distinguishable from the head, and very obtuse. They are as follow: the *fuliginosa*, the *varia*, the *magnifica*, the *flava*, and the *alba*. The last has two varieties; it frequents ant hills, from its fondness of these animals for its food. With its little obtuse snout it digs a hole in these situations, and buries itself from sight.

The genus Cæcilia, has wrinkles on the body and tail; upper lip with two tentacles; it consists of two species, as follow:

The *Tentacula*, or Eel-shaped cæcilia, has a hundred and thirty-five wrinkles of the body; is about a foot long, in circumference an inch; is tailless, has the teeth very small, the body lead-colour, and is said to be harmless: inhabits America.

The *Glutniosa*, or White side cæcilia, has the wrinkles of the body three hundred and forty, of the tail ten; brown with a white lateral line; inhabits South America and India.

The effects of the *bite* of the viper, or the rattle-snake, or indeed of any other of the serpent tribe, whose bite is poisonous, are as follow: a sharp pain is felt in the wounded part, which quickly spreads to all the members, and even to the interior of the body; there is also great swelling, which is at first hard and pale, then reddish livid, appearing gangrenous, and gradually increasing; there are also fainting, vomiting, and convulsions; jaundice sometimes also appears; and the stomach is so sensible that it can retain nothing; the pulse is frequent, small, and irregular; the breathing difficult; there are copious sweats; the sight is disturbed, and the mind deranged. The blood which flows from the wound is blackish; and sometimes a fetid humour oozes out. When all these symptoms have acquired a certain degree of intensity, the patient dies.

Begin by placing a ligature, somewhat tight, immediately above the wound, care being taken that the substance with which the ligature is made be not so narrow as to irritate the skin. The ligature must not be continued too long, as by such means a disposition to gangrene may be encouraged. The wound should be allowed to bleed, and even a gentle degree of pressure may be used, so as to favour the expulsion of the poison. If possible, the bitten part should be kept in warm water for a time. Apply to the swelled parts, which surround the wound, a mixture composed of equal parts of solution of ammonia, or spirit of hartshorn, and olive oil.

When the principal symptoms are diminished, remove this, and replace it by a rag dipped in sweet oil; and rub the limb, from time to time, with the same oil, to which a few drops of solution of ammonia, or spirit of hartshorn have been added. If the swelling should be very considerable, and the pain acute, the ligature must be removed, the object of which is to retard the circulation. Scarifications should not be made, as they often aggravate the symptoms. The wound may be cauterized with one of the following.

The actual cautery. The iron for this purpose should be somewhat larger than the wound, and made as hot as possible; as, the hotter it is at the moment of its application, the less will be the pain, and the more certain the success. —Or *lunar caustic*, (nitrate of silver,) may be powdered and strewed over the whole surface of the wound, which should afterwards be covered with a piece of dry lint, and a bandage tolerably tight. This dressing may be removed at the end of four or five hours. —Or *caustic potash*, (fused potash,) may be used in the same manner as the last.—Or *butter of antimony*, which is to be preferred, after the hot iron, to the others; it may be used thus: affix a small quantity of fine lint to the end of a bit of thin wood, dip this into the butter of antimony, and apply it to the whole surface of the wound; this should be repeated several times; the part may then be covered with lint and bandage.—Or sulphuric acid, (oil of vitriol,) may be used like the last.—Or half an ounce of olive oil, or oil of almonds, may be mixed with the same quantity of melted mutton suet, adding one ounce of solution of ammonia, stirring till the mixture is cold. With this ointment a linen rag is to be well smeared, applied to the wound, and suffered to remain a quarter or half an hour, according to circumstances.—Or the wound may be washed with *soap-boiler's ley*, and covered with a rag soaked in the same, and changed at the end of four or five hours.—Or a paste made of equal parts of powdered quick-lime, and good soap, may be applied in the same manner as the preceding ammoniacal ointment.—Or *Moxa* may be applied as a caustic. See Moxa.—Or the wound may be cauterized with *boiling oil*; it must be used by the aid of a funnel, pressed firmly upon the wound, so as to prevent the cauterization of the surrounding parts.

If after the application of one or other of these caustics, the symptoms are not diminished, the wound must be enlarged, and the caustic applied again, but still more deeply.

The *internal treatment* should have for its object the promotion of perspiration and sleep. With this view, immediately after the accident, the patient should take a glass of orange-flower or other distilled water, with six or eight drops of solution of ammonia, or spirit of hartshorn; this dose may be renewed every two hours; a small glass of Madeira or Sherry may also be given. The patient should also be laid in a bed, and well covered, and perspiration promoted as much as possible. A dose of ipecacuanha; or, if that should not be sufficient, some of the emetics recommended under Poisons (see *section the* *second, narcotic or stupefactive*) should be administered. If there be much bilious vomiting or jaundice, and gangrene continues to make progress, the decoction of bark, &c. mentioned under poisons, (see *section the third, acrid narcotics,* article *horned rye*) should be given. If, on the contrary, the symptoms diminish, and the patient becomes convalescent, no solid food must be allowed during the first few days: but only a small quantity of light thin broth.

If the bite has occasioned only a slight disease, with little swelling, and the patient does not suffer either from nausea or fainting fits, our attention should be chiefly directed to enlarging with precaution the edges of the wound. One or two drops of solution of ammonia, or hartshorn, should also be dropped upon it, and the part covered with a compress soaked in the same; the limb should also be rubbed with warm oil, and wrapped in linen, steeped in the same fluid. The patient should also take five or six drops of solution of ammonia, or spirit of hartshorn, in a glass of orange, elder, or chamomile-flower water.

The juice of the *Guaco*, a plant found in several parts of America, is said to be extremely efficacious in the cure of the bite of venomous serpents.

The following preparation of arsenic is said also to be extremely useful as a remedy for these poisoned wounds.

Boil for fifteen minutes one grain of arsenic, and one grain of potash, in one ounce and a half of water; when cold, add one ounce of pimento-water, ten drops of laudanum, and half an ounce of lemon-juice; this is for one dose, which must be repeated every half hour during four successive hours; at the same time administer the clyster prescribed in the article Lead, under the head *Painter's colic.* The painful part may be rubbed with the following liniment: take of oil of turpentine, solution of ammonia, or spirit of hartshorn, of each half an ounce; of olive oil one ounce and a half. The *arsenical* remedy must be considered, however, as one of the last necessity, and should be had recourse to only when the symptoms are violent, and not readily subdued by other means.

Serpent, the Sea. See Sea-Serpent.

SERPENTINE, a genus of talcose earths, consisting chiefly of silica, magnesia, oxide of iron, and a little carbonate of lime. Its appearance is singularly beautiful and picturesque. Its name is derived, from the variety of tints which it exhibits, such as bright red, green, brown, yellow, and their various shades; it is often traversed by veins of a soft substance, to which the name of *steatite,* or *soap-stone,* has been given. Some of the varieties of serpentine admit of a tolerable polish, and such are desirable for many ornamental purposes. It is seen in Cornwall in characteristic beauty, forming part of the lizard promontory on the southern coast of the country. It is also met with in the Isle of Anglesea, near the Parys mine, and in Scotland.

SERPULA, a genus of testaceous, univalve, tubular worms, generally adhering to other substances, and often separated internally by divisions at uncertain distances. There are forty-eight species, scattered through the seas of the globe; fifteen common to those of our own country. The *penis,* or Watering pot, inhabits the Indian ocean, and is from three to five inches long; the shell is roundish, straight, taper, with a dilated radiate, larger extremity, the disk covered with cylindrical pores.

SERTULARIA, a genus of zoophyte worms. The animal growing in the form of a plant; stem branched, producing polypes from cup-shaped denticles, or minute shells. There are seventy species, scattered through the seas of the globe, and often found on the fuci, or sea-wrack.

Service-tree. See Pear.

Service-tree, the wild. See Thorn.

SERUM, Whey; in anatomy, the yellow and somewhat greenish fluid which separates from the red part of the blood when cold and at rest. See Blood.

SESAMUM, or Oily grain, a

genus of plants, comprising four species, all natives of India. The *Orientale*, with ovate, oblong, entire, opposite leaves, erect hairy stem, and white flower, resembling the fox-glove; and the *luteum* with lanceolate, alternate, leaves, on long petioles, and yellow, axillary, solitary flowers, are the chief. Both are annuals; the first is cultivated in India, Africa, and of late by the negroes in America as a pulse. The seeds yield a good oil which will keep without growing rancid for many years. The seeds are used for food by the negroes, either parched over the fire, or made into puddings like millet or rice. Two quarts of oil have been drawn from nine pounds of seed grown in Carolina. The oil, when kept for two years, loses the warm taste of the seeds, and is then eaten as salad oil.

SETON, in surgery, an artificial ulcer, made under the skin by means of an instrument called a seton needle, which carries with it a portion of silk or thread that is moved backwards or forwards, and thus keeps up a constant irritation.

Setons are frequently formed in the back of the neck for diseases of the head or eyes; or between two of the ribs in affections of the breast. They are occasionally of service by the new action which they introduce into the system, and also by their stimulus; but setons as well as issues, if long continued in the same place, very often cease to be efficacious.

SETONS, in *Farriery*, are sometimes made in sinuses, such as fistula, or poll-evil, in order to make a depending opening, so that the matter may run off freely. They are, for such purposes, very useful as a means of discharging pus and healing abscesses in horses, without leaving any disfigurement.

SETTLEMENT, the ACT OF, in British history, a name given to the statute 12 and 13 W. III. c. 2. whereby the crown was limited to his present Majesty's illustrious house; and some new provisions were added at the same time for better securing our religion, laws, and liberties; which the statute declares to be the birthright of the people of England, according to the ancient doctrine of the common law.

Sewen. See SALMON.

SEXTANT, an astronomical instrument, made like a quadrant, except that its limb only comprehends 60 degrees, or the sixth part of a circle; but by means of a double reflection, it is made to measure any angle not exceeding 120 degrees. The use and application of the sextant is the same as that of the quadrant.

Sexual system. See BOTANY.

Shab. See MANGE.

Shab water. See MANGE.

Shad. See HERRING.

Shaddock. See CITRON.

Shag. See PELICAN.

SHAGREEN, or Chagreen, a kind of grained leather, prepared, it is supposed, from the skin of a species of shark. It is imported from Constantinople, Tauris, Tripoli, Algiers, and from some parts of Poland, where it is said to be prepared in the following manner: the skin being stretched out, is first covered over with mustard seed, which is bruised upon it; and being thus exposed to the weather for some days, it is then tanned. The best is of a brownish colour; the white sort is the worst; it is extremely hard; yet when steeped in water it becomes soft and pliable; and being fashioned into case covers, it readily takes any colour, as red, green, yellow, black, according to the fancy of the workman. It is sometimes counterfeited by preparing Morocco leather as above; but it is easily detected, as the surface of the spurious article peels off, while the genuine remains perfectly sound.

SHALE, a kind of soft slate, containing impressions of vegetables, and sometimes the remains of fresh-water shell-fish.

Shallot. See ESCHALOTTE, and GARLIC.

Shame. See BLUSHING.

SHAMMY, or CHAMOIS LEATHER, a kind of leather dressed in a peculiar way, with an addition of oil, and much esteemed for its pliability, softness, and being capable of bearing soap without hurt. The true shammy is prepared from the skin of the chamois goat; but it is counterfeited by many other skins. See LEATHER.

SHARK, or *Squalus*, a genus of fishes comprehending thirty-four species, scattered through the seas of the globe, twelve of them inhabitants of our own coasts. This dreadful and rapacious tribe inhabit the sea only, and are rarely found in the Baltic; they shine by night, and have a tapering sub-compressed body, which in some species grows to an enormous bulk, weighing from one to four thousand pounds; mouth beneath; their teeth are numerous, serrate, unequal, sharp, partly moveable, partly fixed; their flesh is hard, tough, and rank; from the liver is extracted a large quantity of oil; the skin is used for carriage traces, and for polishing wood, ivory, &c. They are mostly solitary, wandering, devouring whatever comes in their way; and following ships to seize any thing that may happen to be thrown overboard. They bring forth the young alive, more than one at a time, each of them inclosed in a square, pellucid, horny case, terminated at the four corners by very long slender filaments, which are generally twisted round corallines, sea weeds, or fixed marine substances. The following are the chief:

The *Canicula*, or Spotted dog-fish, inhabits most seas, and is found on our coasts; four feet long; very voracious, feeds chiefly on fishes; body reddish-brown, with large distinct black spots, beneath white, a little compressed at the end. The skin, when dried, is highly useful for various purposes. The tendrils issuing from the ovary are known to anglers by the name of *Indian grass*.

The *Stellaris*, or Rock shark, is from two to six feet long; body reddish, with unequal blackish spots; beneath dirty ash; resembles the preceding, but the spots darker and fewer; inhabits the European ocean; brings from nineteen to twenty young at a time.

The *Galeus*, or Tope, is about three feet long; body dark, cinereous, beneath paler; exceedingly voracious; inhabits the European ocean.

The *Mustelus*, or Smooth hound, inhabits the European and Pacific seas, and our own coasts; two feet long.

The *Zygæna*, or Hammer-headed shark, has the head very broad, hammer-shaped; in shape peculiarly hideous; one of the most rapacious of the tribe; sometimes weighs five hundred pounds; inhabits the Mediterranean, American and Indian seas.

The *Vulpes*, Sea fox, or Long-tailed shark, has the upper lobe of the tail as long as the body; seven feet long; body above blueish ash, beneath paler; exceedingly voracious; inhabits the Mediterranean sea, and often wanders on the British coast.

The *Maximus*, or Basking shark, or Sail fish, has conic teeth; the largest of the genus, but neither voracious nor fierce; from fifteen to thirty feet in length; colour above leaden, below pure white; body slender and tapering. The oil produced by this species is said to be preferable to every other for the manufacture of wool; the skin furnishes workmen with excellent shagreen. It inhabits cold climates, and is well known to the inhabitants of the west of Scotland and Ireland; it has the name of sail fish given to it, because it is seen at a distance on the top of the water with all its dorsal fins appearing above the surface, spread like sails. The oil arising from them is now made, in Scotland, an article of trade; they are taken with the harpoon; one fish has produced from six to eight barrels of oil.

The *Carcharias*, or White shark, has triangular serrate teeth; the most ravenous and formidable of the whole tribe, and grows to the immense weight of four thousand pounds; a corpse has been found whole in the body of one of this species; in all hot climates it is a great terror to sailors; it is furnished with six rows of teeth; it constantly attends ships, watching till some one drops overboard, or attempts to bathe; in either case the victim perishes irrecoverably; for this voracious creature will even dart above the water to meet him in his fall.

This species, when it takes its prey, inclines its body in an oblique direction, so as almost sometimes to be on its back in the water; and it takes this peculiar position, no doubt, in consequence of the great projection of its upper jaw. Pliny mentions the fact, and it has been re-asserted by most succeeding naturalists. Bloch, however, doubts it. In order to be assured of its truth, we have consulted Mr. K. St. Barbe, a gentleman who has crossed the Atlantic eighty times, and he informs us, that the fact of the West Indian shark turning more or less on its back, when taking its prey, is undoubted.

The *Glaucus*, or Blue shark, has the back a fine azure colour; and similar in habits to the preceding; found, not only in warm climates, but often seen on the British coasts.

The *Squalina*, or Angel fish, in its external figure approaches the ray; but the mouth is in the extremity of the snout, and not below the head; the pectoral fins are large, whence this species received its specific name; from six to eight feet long; colour of the back and sides brownish, belly white, weighs sometimes one hundred and fifty pounds; found in the Northern and Mediterranean seas, and on the British coast. The skin is occasionally made into sword sheaths.

Sharp-pointed dock. See Dock.

SHAVING POWDER is composed of white soap cut into thin slices, dried by the fire, and afterwards powdered and passed through a sieve, to which is usually added about one-third of its weight of yellow resin, also in powder.

SHEATH-BILL, or *Vaginalis*, a genus of birds having a strong, thick, conic-convex, compressed bill, the upper mandible covered above with a moveable horny sheath. One species only, the *alba*, or White sheath-bill, which inhabits New Zealand and the South-sea islands; it is from fifteen to eighteen inches long; feeds on shell-fishes and carcases.

SHEEP, or *Ovis*, a genus of well-known quadrupeds consisting of four species, according to Linnæus; according to Dr. Shaw, of three species only; but another species has been lately described, which inhabits the mountainous regions of America. They are as follow:

The *Aries*, or Common sheep, having compressed lunate horns. Fourteen varieties:—the Hornless sheep;—the Black-faced sheep;—the Spanish sheep;—the many-horned sheep;—the African sheep; the Guinea sheep;—the Broad-tailed sheep;—the Fat rump sheep;—the Bucharian sheep;—the Long-tailed sheep;—the Cape sheep;—the Bearded sheep;—the Mervant sheep;—the Cretan sheep. It continues to increase in growth till three years old, when it is commonly in the greatest perfection; but it will be proper for this purpose, as well as breeding, till five or six.

This species inhabits the whole globe; changes its teeth with its age; feeds on short and tender grass, chiefly sheeps' fescue; has a peculiar tone called bleating. In disposition, the sheep is naturally tame, quiet, and inoffensive. It is very gregarious. The ordinary term of the life of those sheep which escape disease and violence, is twelve or thirteen years See Breeding, Gestation, Milk, and Mutton.

The ram is esteemed the best shaped that has a thick head, a broad front, large black eyes, a broad nose, a long high body, a large crupper, and large reins, massy testicles, and a long tail. His colour should be white, his fleece full and heavy. Those ewes are preferred which have thick necks, large, soft, and silky fleeces, large bodies, and a nimble motion in walking. One ram is sufficient for fifty ewes. He becomes able to propagate his kind at the age of eighteen months; the ewe at a year old. The ewe is in season for the ram between the beginning of September and the end of November; but if fed on good pastures, or nourished on purpose with stimulating food, they will conceive at any time of the year. It is best to permit them to mix with the rams at such time that they may bring forth when there is the greatest abundance of grass for feeding the lambs. The rams and ewes should be kept separate when propagation is not desired. The ewe goes with young five months; she usually produces only one lamb at a time; but sometimes two, or even three. The sheep, it is very observable, drinks little; the juice of the vegetables which they eat, and the dew and rain with which the grass is often moistened, supply almost all the moisture which they need.

The benefits which mankind owe to this animal are very numerous. Its horn, its fleece, its flesh, its tallow, its skin, and even its bowels and bones, are all articles of great utility to human life, and its conveniences. The horns are made into spoons and many other useful articles. The manufacture of the wool into cloths has long formed one of the chief sources of the wealth of this country, and the skin is made into parchment, leather, &c.

The varieties of sheep are distinguished in this country by different names, according to the places where they are bred: the following table will best explain them; although there are many other breeds, besides these, known to the grazing farmer.

				Weight of fleece.
Dishley....	No horns	White faces and legs	Combing, or long wool........	8lbs.
Lincoln				11
Tees water .				9
Dartmoor ..				9
Exmoor	Horned	Ditto	Ditto	6
Dorset......	Small horns	Ditto	Carding, or fine short wool...	3½
Hereford	No horns	Ditto	Very fine short wool	2
South down...	Ditto	Grey faces and legs	Ditto	2½
Norfolk......	Large horns	Black faces and legs	Fine short wool	2
Heath	Ditto	Ditto	Coarse long wool	3½
Herdwick	No horns	Speckled ditto	Short wool	2
Cheviot.......	Ditto	White faces and legs....	Fine short wool	3
Dun faced....	Ditto	Dun faces and legs	Ditto	1½
Shetland	Ditto	Colours various	Fine cottony wool	1½
Romney marsh	Ditto	White faces and legs....	Long wool	8
Spanish, or Merino	Males horned, females sometimes without horns.	Ditto	Short wool very fine	3½

The modes of managing sheep differ in different countries, and even in the same country. The lambs are seldom separated from their mothers till they become large and vigorous. As one ram is able to impregnate a good many ewes, only a small portion of the male lambs are permitted to retain their genital organs. The operation of castration is performed at different ages in different districts; but it is generally most proper to be done in the first fortnight in the strongest lambs, and, in the weaker kind, from a fortnight to three weeks or a month old, according to circumstances. Lambs are usually weaned in July.

Wedders, or wethers, castrated sheep,

are less vicious than rams, and their flesh has a better flavour.

It is a practice in some districts to dock the tails of sheep with an intention, doubtless, of keeping the animals more clean; some, however, conceive it improper, as preventing the sheep from being able to beat off the flies in hot seasons.

The sheep is said to change its fleece annually, and therefore the best time for shearing it is just before the fleece is ready to fall off. This time must, however, be regulated by the state of the weather and the climate. In the southern districts of this country, the beginning or middle of June, if the weather be fine, is a good time, although it is often done much earlier; but if sheep be shorn in cold weather, they will be almost sure to receive some injury; and if in nothing else, the cold will retard their fattening. Lambs are usually clipped or shorn a month or six weeks after the operation has been performed on the old store sheep. Sheep are usually washed previous to being shorn, in order to cleanse the wool; but care should be taken, if they are plunged into cold water, that they be moved gently about for some time afterwards, till the wool is dry.

During the time the ewes are with lamb, they should be kept in pastures, and carefully attended to in order to prevent accidents; and they should be kept in as good condition as the farms will permit. Should any ewes slip their lambs, they should be immediately removed from the flock. When pasture, or other grass lands are not to be had, turnips or other green food must be given them; although it is better to leave this kind of food untouched, till about the period of lambing; at which time they should be placed in dry, sheltered, and warm pastures. If the soil is not sufficiently dry to admit the sheep, the turnips should be drawn and carried to them, on a dry and sound pasture; they should be fed twice a day.

On the subject of *fattening* sheep, what we have to observe has been anticipated under the various articles BREEDING, FOLDING, HUSBANDRY, &c., to which we refer, and also to OX, under which articles will be found many remarks deserving of the serious attention of the sheep farmer; see also CABBAGE, CARROT, CLOVER, &c.

Sheep are liable to various diseases; the mode of treating which will be found under the respective articles BRAXY, FLY, FOOT-ROT, ROT, MANGE or SHAB, &c. &c.

In Wales and Scotland the sheep are generally of a small and hardy kind. In delicacy of flavour their flesh is much superior to the larger breeds; and even the wool is sometimes of very good quality.

The northern regions of Europe, particularly Gothland and Iceland, furnish the variety distinguished by having three, four, or even five horns. The Iceland sheep are extremely hardy; they afford great quantities of milk; from two to six quarts a day. This sheep is not shorn, but about the end of May the fleece loosens of itself, and is stripped off at once like a skin.

The Spanish, or Merino sheep, remarkable for the fineness of their wool, are distinguished by spiral horns, bending outwards. Notwithstanding the numerous attempts to improve our breed of sheep, we still continue to import vast quantities of Merino wool from Spain.

The African and Guinea sheep are remarkable varieties of this species; their form is meagre, legs long, ears pendant, neck shaggy, and the covering of the whole body is more like hair than wool.

The Cretan sheep is remarkable for large spiral horns; it is found in abundance in Austria, Hungary, on Mount Ida, and in the islands of the Archipelago.

The countries of Asia, which abound most in sheep, afford another variety, distinguished by the amazing breadth and bulk of their tails. They differ little from our common sheep; are generally white, yet sometimes varying in colour. The tail is seldom pointed, but either square or round, much like a cushion. The great size of the tail renders it often so incommodious to the sheep that it is found necessary to support it with a small wheeled carriage; some of these tails weigh more than 50lbs.: the common weight exceeds 30lbs.; they chiefly consist of fat. It is found in Persia, Assyria, Arabia, Egypt, Ethiopia, Barbary, and Tartary. It is found also at the Cape of Good Hope; the Cape sheep have also large and pendent ears. Another variety of this kind is called the Fat-rumped sheep, having no tail, but its buttocks swell out like two globes; these globes are composed solely of fat, and sometimes weigh forty pounds; found in Tartary; a very prolific race.

The *Ammon*, Argali, or Siberian sheep, has arched and semi-circular horns; dew-laps lax, hairy; colour in summer brownish ash, mixed with grey; beneath whitish grey; tail short, white, brownish at the tip; hair long in winter, shed in spring; ears erect, acute; hind feet longer than the fore. Another variety with the body tinged with brown; a white mark on each side, pointing to the belly. Females smaller than the males; sometimes has no horns. Found wild in Siberia, Kamschatka, the Kurile islands, Corsica, and Sardinia; is gregarious, feeding in small flocks. They are hunted by the Kamschatkadales, for their skin, and as food. An individual of this kind brought to England by general Paoli, lived to be twenty-four years old; the horns of this animal were twenty-two inches long.

The *Pudu* has the horns smooth, divergent; female without horns; size of a large kid; gregarious, found on the Cordilleras, in South America, and the neighbouring vallies; easily tamed. The bearded sheep, or Siberian goat, found on the mountains of Asia, and in Barbary, is supposed to be a variety of this species.

The *Montana*, or Rocky mountain sheep; horns like a goat; skin covered with white hair, beneath which is a coat of wool; the wool of the young animal exceeding in fineness that of the Merino lamb; found in the rocky mountains of the back settlements of North America; it has never been domesticated, and its habits, manners, and uses are little known. It is about the size of a goat. Some naturalists are of opinion that this is the same as the preceding species.

SHEEP'S SEA BRIARS, SHEEP'S BIT, or *Jasione*, a genus of plants consisting of one species, the *montana*, an indigenous, annual plant, found wild on our sandy pastures; a variety indigenous to the south of France, is perennial. This plant is eaten by sheep; its blue flowers emit a musky odour, and are visited by bees.

Sheep, Peruvian. See CAMEL.

Sheldrake. See DUCK.

Shell-lac. See LAC.

Shepherd's needle. See CICELY.

SHEPHERD'S PURSE, PENNY CRESS, or Thlaspi, a genus of plants containing fourteen species; one a native of Arabia, the rest of Europe; six indigenous to our own fields, mountains, or pastures. Two of these, the *arvense*, or Treacle mustard, and the *campestre*, or Mithridate mustard, were formerly in the materia medica, but are now expunged. The seeds are acrid, and approach in their taste and qualities to common mustard. But the whole genus is unimportant.

SHILLING, an English silver coin, equal to twelve pence, or the twentieth part of a pound sterling.

SHINGLES, a species of erysipelatous inflammation, which most usually attacks the trunk of the body. It consists of a number of little pimples, extending round the body a little above the navel, which have vesicles formed on them in a short time. Little or no danger ever attends this disease. The general treatment, however, should be the same as that for erysipelas; no repellents should be used. See ERYSIPELAS.

SHIP-WORM, or *Terebella*, a genus of molluscous worms consisting of eleven species, scattered through the seas of the globe. The following are the chief: The *complanata*, or Ship-worm, with a depressed body, with four cirrhi round the mouth, and a double row of lateral pencilled protuberances on each side; inhabits the seas round the West India islands, and is extremely destructive to vessels lying at anchor, cutting with great facility through the stoutest plank, and incrusting the sides of the hole with a smooth testaceous coat. The *conchilega* is about five inches long, body whitish, with numerous filiform cirrhi round the mouth, pellucid and tapering towards the lower end; about the size of a goose-quill; inhabits the British coasts, within the shell of the *sabella tubiformis;* the only species found on our shores. The *carunculata*, has a quadrangular depressed body, is from nine to fourteen inches long; inhabits the American and Indian seas, and very destructive to shipping. The *bicornis*, inhabits the American ocean, and perforates some of the globose madrepores, where it resides, and occasionally protrudes in search of food.

Another genus of testaceous worms, the TEREDO, consisting of four species, may with propriety be mentioned here. The *navalis*, or Ship-worm, has a very thin shell, cylindrical and smooth, more or less twisted; from four to six inches long; found in the sides and bottoms of ships, &c. It acts to the same effect as the *terebella complanata*, but with still greater power. The *utriculus* is seven inches long, the *clava*, is found in the seed-vessels of the *xylosteum granatum*; the *gigantea*, is from five to five feet and a half long; found in a mud bank in an island north-west of Sumatra. See *Philosophical Transactions* for 1806, Part I.

SHIPWRECK, the destruction of ships by their being dashed to pieces, destroyed or sunk, either in striking against rocks, or sands, or by the fury of the sea itself.

The greatest dangers, however, to which ships are exposed, are for the most part within sight of the shore, or within a short distance of it, in consequence of rocks or sand-banks, upon which they are sometimes dashed to pieces, by the tempest, or run aground, so as not to be got off again in such a state as to be fit for sailing. In such cases, the crew often perish, for want of proper assistance, or means to convey them to the shore. Common boats are often useless in such situations. For the same reason, many have perished in their own boats, when quitting the wreck, they having attempted to reach the shore. In other cases, however, a common boat has very often afforded effectual relief, and, therefore, where no other chance offers of saving life, and when inevitable destruction awaits those who remain on a wrecked vessel, the alternative of such a boat will, and must be necessarily adopted.

The difficulty of proceeding to and effectually succouring the crews of shipwrecked vessels in common boats, led to the invention of what is called the LIFE-BOAT, by Mr. GREATHEAD; under our article LIFE-BOAT an account of its construction will be found. It is to be lamented, however, that a boat of this construction is not more commonly to be seen in our harbours; for although this boat and improvements upon it, have excited some degree of public attention, they are comparatively little known, and less used. Surely it would not be unworthy an enlightened and patriotic government, to provide a life-boat at occasional stations, or harbours, around the whole of our island, so that, in the event of shipwreck, it may be immediately at hand.

But as it frequenly happens in shipwrecks, that no life-boat is at hand; and that the crew either have no boat, or the boat is useless in such a situation, the method of throwing a line on shore by means of a shell from a mortar, by Lieutenant Bell, may be resorted to. In an experiment of this kind, a boat was moored 250 yards from the shore, the shell was thrown 150 yards on the shore with the rope attached to it; the shell was of cast iron, filled with lead; its diameter 8 inches; weight 75lbs. The rope was a deep sea-line, of which 160 yards weighed 18lbs. By means of this line kept fast on the shore by the ball, Mr. Bell and another man worked themselves on shore upon a raft formed by lashing five empty casks together, one in the centre, one at each end, and one at each side of the central cask. The mortar should be such as that the chamber will contain one pound of gunpowder, and the bore should admit a leaden ball of sixty pounds, or upwards; it is advisable to keep such an instrument always on deck, with a rope, &c. at hand.

Another method, directly the reverse of the foregoing, has been invented by Capt. Manby. It consists in *throwing a rope from the shore to a vessel in distress*, by means of which the crew may be drawn to the shore. The object in firing is, to throw the shot beyond the vessel, so that the rope to which it is attached may lie across it. The same gentleman has also contrived a barbed shot, for the purpose of catching the rigging and securing the rope; he has also invented a cot to slide on a rope to convey females and infirm persons from the wreck to the shore.

But as tempests and shipwrecks often happen in the night, when the vessel cannot be seen from the shore distinctly, Captain Manby proposes to employ a hollow ball, made to the size of the piece, and composed of layers of cartridge paper, to the thickness of half an inch; this ball, being filled with about fifty luminous balls of star composition, and a sufficient quantity of gunpowder, to burst the ball, and inflame the stars, is then projected into the air towards the supposed place of the wrecked or stranded vessel. The stars, as they fall, illuminate the sea to a great distance round, and continue their splendour a sufficient time to allow the vessel to be seen. Its direction is determined in an instant, by means of two upright sticks painted white, and fixed in a plank by the side of which the mortar is to be placed, and will thus point exactly towards the vessel. The shell affixed to the rope, differs from that used in the day-time, by having four holes in it, to receive a like number of fusees, and by being filled with the fiercest and most glaring compositions, when inflamed by the discharge of the piece, forms a brilliant track for the rope, which is rendered visible by the persons in distress. See "*An Essay on the Preservation of Shipwrecked Persons*, by G. W. Manby, Esq.

Various other apparatus have been contrived for escape, or rescue from shipwreck, and that dangerous element the sea. The *cork-jacket* is one of these. See Cork-Jacket.

The *Marine Spencer*, invented by a gentleman of the name of Spencer, is made in the form of a girdle, of a proper diameter to fit the body, and six inches broad, composed of about 500 old corks, strung upon a strong twine, well lashed together with lay-cord, covered with canvas, and painted in oil, so as to make it water-proof. Two tapes, or cords, about two feet long, are fastened to the back of the girdle with loops at the ends; another tape, or cord, of the same length, has a few corks strung to the middle of it, is covered with canvas and painted. A pin of hard wood, three inches long and half an inch in diameter, is fastened to the front of the girdle, by a tape, or cord, about three inches long. To use the spencer it should be slidden from the feet close up under the arms; the tapes or cords are to be brought one over each shoulder, and fastened by loops to the pins; the tape or cord between the legs, is to be fastened to the other pin. A person thus equipped, though unacquainted with swimming, may safely trust himself to the waves: for he will float head and shoulders above the water in any storm, and by paddling with his hands, may easily gain the shore. Such a spencer may be also made of cork-shavings, at a very trivial expense. A canvas bag would serve very well to hold the corks, or cork-shavings, and if of greater breadth than the spencer, might answer many good purposes, if kept on shipboard, although it should not be waterproof. It has been suggested, that pieces of cork might be worked into the ordinary dress of sailors, especially about the shoulders and neck; this might itself be the means of saving many lives.

For an account of *life-preservers* and *life-rafts*, so useful in some cases of shipwreck, see LIEE-PRESERVER, and LIFE-RAFT.

Although the *Night life buoy* is not an apparatus exactly designed to assist in cases of shipwreck, it is calculated for accidents nearly allied to it, and we therefore notice it here. See *Night life buoy*.

For the treatment of other accidents occasionally attending shipwreck, such as great numbness from cold, long fasting, and apparent death from immersion, or long-continuance in water. See COLD, HUNGER, THIRST, and DROWNING. See also ACCIDENTS.

Shirt. See CALICO and DRESS.

SHOAD, among miners, a train of metalline stones, serving to direct them in the discovery of mines.

Shoe. See BLACKING, CORNS, DRESS, and FOOT.

SHOEING, in *farriery*, the operation of fixing plates of iron, commonly called shoes, on the feet of horses.

In shoeing a strong, well-formed foot, there is no great difficulty; but when the feet are ill formed, considerable care and skill are often required, both in the preparation of the foot, and in the application of the shoe. The bottom of a well-formed foot is, in a small degree, hollow; that is, the crust is rather higher than the sole, the frog large and solid, the bars open and distinct. The only preparation necessary in such a foot is, to make the bottom of the crust level, by means of a rasp, to scrape off any loose horn there may be in the sole, and to leave the frog and bars untouched. The toe of the shoe should be about an inch wide, and half an inch thick; the heel a little narrower and thinner. That surface of the shoe which bears on the ground, should be perfectly flat; that next the foot, particularly towards the toe, should be a little hollowed. The toe of the shoe being the part which wears most, should be formed of steel. The nails should be placed as near the toe as is consistent with the security of the shoe, that there may be as little restraint as possible upon the motions of the heels and quarters of the hoof.

When the bottom of a horse's foot is flat or convex, it is at the same time, much thinner, and less capable of bearing pressure. The shoe for such a foot should be wider and more concave on its inner surface than otherwise. Great care is also necessary in nailing on the shoe.

The shoes of horses should not remain on their feet longer than a month, but should be removed in order that the hoof may not be injured.

Horses which have oblique pasterns, with weak low heels, require a shoe rather thicker at the heel than the shoe which we have described above; and where the pasterns are short and rather upright, and the crust of the heels deep and strong, a thin-heeled shoe is proper. Such heels generally require to be lowered with the rasp or drawing knife before the shoe is put on.

No specific form of shoe can, however, be suited to all horses under all circumstances, it being frequently necessary to alter the shoes of the same horses at different periods.

The shoes should be proportioned in weight to the size and ability of the animal. The following rules for the weight of horse-shoes may be of service.

	lb.	oz.
For the strongest sort of cart-horses	2	12
For the smaller horses of this kind	1	12
For the largest coach horses	1	12
For smaller coach-horses . . .	1	4 oz.
For saddle-horses of every height	1	2 to 10
For race-horses	5oz. to	4

By reducing the superfluous breadth of these shoes, their thickness may be increased without making any addition to their weight. See FROG, and PRICKING.

Various patents have been obtained at different times for horse-shoes, and different opinions are entertained of their merits; the last is by Mr. COLEMAN, and is described with a plate, in

No. V. of the London Journal of Arts and Sciences. We understand that this new shoe of Mr. Coleman's is considered one of the best remedies for contracted hoofs that has ever been invented. Those of our readers who desire more information, relative to shoeing, may consult COLEMAN on the *Foot of the Horse*, GOODWIN on *Shoeing Horses*, and CLARK on the same subject.

The shoe for the fore-feet of the mule is made, in general, very similar to that which farriers call the bar-shoe, very wide and large, and projecting beyond the hoof; the shoe for the hind feet is open at the heels like the horse's shoe, but it is lengthened at the toe like the fore-shoes; both being made to project sometimes even four inches beyond the hoof, with a view to enlarge the basis of the foot, which is, in this animal, generally narrow and confined. But this is, we conceive, an awkward way of assisting nature.

The foot of the *ass* requires the same kind of shoe as the mule, with this difference only, that the shoe for the fore-foot is not closed at the heel, and that its edges do not project so much beyond the hoof, the same form of shoe is also used for the hind feet of this animal.

The shoe of the *ox* consists of a flat plate of iron, with five or six stamp-holes on the outward edge to receive the nails; at the toe is a projection of four or five inches, which passing in the cleft of the foot, is bent over the hoof so as to keep the shoe in its proper place. But the method of shoeing oxen varies in different places and countries. See OX.

Shoote. See CALF.

Short sightedness. See SIGHT and SPECTACLES.

Shoveler. See DUCK.

SHOULDER, the joint which connects the arm with the body.

This joint is liable to dislocations; these are most frequently forwards and downwards; sometimes downwards and backwards; but never upwards, without a fracture of a part of the scapula, which is placed above the joint. It is discovered by the patient's inability to raise his arm, by violent pain attending the attempt, by the luxated arm being of a different length from the other, by the head of the humerus being felt out of its natural situation, while a vacuity is perceived under the anterior part of the shoulder blade; when the luxation is of long standing, the whole arm is apt to become œdematous; no time should, therefore, be lost in restoring the limb, as soon as possible, to its natural situation.

The patient should be seated on a chair, and his body secured by a broad belt passed round it, and held by assistants. The elbow should be bent in order to relax the muscles. A firm leather bandage, four or five inches broad, with strong straps, is to be tied round the arm immediately above the elbow; the arm should then be gradually extended by the assistants pulling these straps, whilst another person draws back the shoulder blade. The extension must be varied according to the situation of the head of the bone. As soon as the head of the bone has cleared the brim of the socket, it will be returned to its place by the action of the muscles, an effect which is indicated by a loud crack.

Other methods of extending the arm have been proposed in difficult cases, such as suspending the patient by the luxated arm over the steps of a ladder, or the top of a door, &c. and which have by a sudden jerk, succeeded in restoring the bone to its place. A gentler method is to lay the patient on the floor, while two or three stout men, standing on a table, lay hold of him and pull him up. These methods are, however, not unattended with danger. Indeed, in such an accident, the advice and assistance of an able surgeon should, if possible, at once be had.

If, after the operation, inflammation appear, lotions of Goulard water, and leeches, will be necessary to be applied to the tumefied part. The arm ought also to be retained for some time in a state of rest, by a proper bandage, or a sling, till it has acquired its former strength.

Shoulder-blade. See BLADE of the SHOULDER.

SHREW, or *Sorex*, a genus of animals, comprising seventeen species, scattered over the globe; two common to our own country. This genus, in their heads, resemble the mole, in other parts, the mouse; they burrow and live under ground; generally feed on worms and insects. The following are most worthy of note: the *moschatus*, or Musky shrew, found on the banks of the Wolga; out of its tail is expressed a sort of musk. The *Cœruleus*, or Blue shrew, is nearly eight inches long; smells also strongly of musk; inhabits Java and other East Indian Islands. The *mexicanus*, or Mexican shrew; the *brasiliensis* or Brasilian shrew; the *marinus* or Marine shrew; the *araneus*, or Fetid shrew; the *bicolor*, or Water shrew; the *minutus*, or Minute shrew: and the *exilis*, or Pigmy shrew.

SHRIKE, or *Lanius*, a genus of birds, comprehending fifty-six species, scattered over the globe, of which two only are common to our own country. The bill is straitish, with a tooth on each mandible, near the end, naked at the base; tongue jagged at the end. The birds of this genus are noisy and quarrelsome, and prey on smaller birds, tearing them to pieces, and sticking the fragments on thorns. The following are the chief:

The *Excubitor*, or Great shrike, of which there are three varieties: one has the tail wedged: white at the sides: back hoary; wings black with a white spot; another has a white body; legs yellowish; the third has the smaller wing coverts and shoulders reddish. In all, the bill and legs are black; crown and neck hoary; body beneath white with pale brown arched lines; tail white at the tip, except the two middle feathers; cheeks white with a black transverse line from the base of the bill; nest made of dry grass and feathers; lays seven bluish eggs, spotted with brown.

The *Collurio*, has five varieties; the first has the tail somewhat wedged, back grey, four middle feathers uniform; bill lead-colour; common to England, and called the *butcher bird*. Another has the body above variegated white and black, beneath reddish white. Common also to England and called *wood chat*. Another variety has the body grey, beneath reddish brown; inhabits Europe; two other varieties inhabit Senegal. This species is seven and a half inches long; builds in bushes and hedges, lays six eggs, with a circle of brown near the broad end; kills small birds, by piercing the skull with its bill; imitates the notes of other birds, to decoy them into its clutches.

The *tyrannus*, or Tyrant shrike, has the body cinereous, beneath white, crown black, with a longitudinal tawny streak, eight inches long; builds in hollow trees; fierce, audacious; fixes on the back of eagles and hawks, and makes a continual chattering till they are compelled to retire. Three other varieties. Inhabits America.

The *Faustus*, or Wreathed shrike, is grey, beneath rusty; size of a fieldfare; a native of China, and often painted on paper hangings, brought from that country.

The *Nengota*, or Grey shrike, has the body cinereous, beneath white; nine inches long; gregarious; inhabits Brazil, Surinam, Russia, and Siberia.

Shrimp. See CRAB.

SHRUB, or *Frutex*, in botany, a plant with several permanent woody stems, dividing from the bottom, more slender and lower than trees. Box, ivy, juniper, furze, &c. are shrubs.

SHRUB, a compound liquor, made of ardent spirits, orange juice, and sugar.

We mention this mixture merely to observe that it should never be drunk by any one whose digestion is not of the first order. Indeed, such compound liquors are always more or less mischievous to health.

SIALAGOGUES, those medicines which excite an uncommon flow of saliva ; such are the preparations of mercury, pellitory of Spain, &c.

Siberian crab. See PEAR.

Sickle. See HUSBANDRY.

SIDA, a genus of plants having numerous capsules, one or three-seeded, and consisting of ninety-nine species, all natives of the East or West Indies, or the Cape, and having purple, white, or sulphur-colour flowers. The following species are cultivated ; the *rhombifolia,* or Rhomb-leaved, the *periplorifolia,* or Great bindweed-leaved, the *triquetra,* or Triangular-stalked, the *abutilon,* or Broad-leaved, the *cordifolia,* or Heart-leaved sida ; and the *asiatica,* small-flowered sida, or Indian mallow. They may be raised by seeds ; some from offsets or cuttings ; they are ornamental to the stove ; the *abutilon* in open borders, to which it may be entrusted.

SIDE-SADDLE PLANT, or *Sarracenia,* a genus consisting of four species, natives of America ; the two following are cultivated. The *flava,* or Yellow side-saddle flower, has erect, tubular leaves ; flowers on naked pedicles rising three feet from the root, and appearing in June and July. The *purpurea,* or Purple side-saddle flower, has the leaves hooded, swelling, spreading, arched, hollow, and round at the outside, with a broad leaf running down the tube on the inside ; corol purple without, green within, with purple edges. They are reared with difficulty in this country ; the best way is to procure them from their natural boggy soil, with large balls of earth to their roots planted in tubs of earth. When imported, they should be removed into large pots, filled with soft spongy earth, mixed with rotten wood, moss, and turf. In the winter they require the shelter of a frame ; in summer of a shade.

SIGHING, an effort of nature by which the lungs are put into greater motion, and more dilated, so that the blood passes more freely and in greater quantity to the left auricle and thence to the ventricle of the heart.

SIGHT, that perception which we have of bodies through the medium or by the impression of light. The immediate organ of sight is the *eye* ; under which, and *iris, pupil,* and *retina,* an anatomical description of this organ will be found. The various diseases of the eye are either treated of under EYE, or in the order of the alphabet to which they respectively belong. See GUTTA SERENA, OPTHALMIA, &c.

Persons who are short sighted, are called *myopes,* the disease *myopia* ; persons who see best at a distance are called *presbyopes* ; the disease *presbyopia.* The former complaint or disposition of the eye depends, for the most part, on its original structure, and does not often admit of a cure ; it arises chiefly from a too great convexity of the cornea. Infants from this circumstance are often myopes ; but by degrees as they advance in years, they perceive objects more remotely by the cornea becoming less convex. Artificers occupied on minute objects, and persons reading much, frequently after puberty, become myopes.

Presbyopia may arise from various causes. From a flatness of the cornea ; or from too small density of the cornea or humours of the eye ; whoever is affected from this cause is cured in older age : for age induces a greater density of the cornea and lens. It may also arise from a habit of viewing continually remote objects. From a multitude of causes aged persons are presbyopes.

Both these complaints, or inconveniences, may be in some measure obviated by the help of proper glasses ; the former requires a concave, and the latter a convex glass. When these diseases are caused by bad habits, nothing short of a total abstinence from them can lead to a cure. •

Relative to the sight, generally, it may be observed that *moderate use* of the eye, particularly on minute objects such as reading, sewing, &c. promises the best and most effectual method of preserving it in health ; that all strong and unnatural glares of light are always bad ; and that the fashion, lately introduced, of screening the rays of artificial light from the immediate contact of the eye, and throwing them upon white paper, a practice very common in merchants' counting houses, is suited to certain diseased eyes only, but as a general method of administering light is bad, and founded on erroneous principles. Nor is the colour of the rays of light, thus artificially thrown, of trifling consideration; the light from oil lamps is, in general, bad. See SPECTACLES and also COLOUR, LIGHT, and RADIANT MATTER.

Silex, or *Flint*. See FLINT.

Silica. See FLINT.

Silicium. See FLINT.

SILK, the fine glossy thread spun by various species of the caterpillars, or larves of the *phalæna*, or moth genus. Of these the species called the atlas yields the greatest quantity; but the *mori* is that commonly employed for this purpose. There are also some species of testaceous worms, which possess a long silky byssus or beard, which is occasionally used for the same purpose as the silk of the silk-worm, and is of a softer texture. See MOTH, MULBERRY, NACRE, and the following articles.

SILK-COTTON-TREE, or *Bombax*, a genus comprehending six species, having a woody capsule, and woolly seeds, natives of Asia, Africa, and America. They are extremely useful from the cotton which they produce. That of the *ceiba*, a native of America, and of the *pentandria*, an Indian tree, is coarse, but produced in very large quantities, and used by the poorer inhabitants to stuff their pillows and chairs. The last tree of these two species, when full grown, is one of the largest trees with which we are acquainted; and is said to be able to shade an army of twenty thousand men with its enormous branches.

The cotton of the *Heptaphyllum* of South America, is a beautiful, soft, fine, purple down, and is spun without dyeing, and woven into dresses, for the more opulent and delicate ranks of the natives. We do not think that this raw material has obtained the attention from the merchants and manufacturers of this country to which it is entitled.

SILK-WORM, or *phalæna mori*, is a native of China, where it is found on the leaves of the mulberry, its only natural and proper food.

The caterpillar of this species, when full grown, incloses itself in a loose web, in the midst of which it forms a much closer case or covering of an oval form, and varying in colour, from white to a deep orange, but usually of a bright yellow colour. In this case or *cocoon*, the animal becomes a chrysalis, and remains inclosed about fifteen days; when having resumed an active life in the form of a moth, it makes a hole at one end of its prison and comes out. This, as it destroys the value of the silk cocoon, is prevented in those countries where silk is cultivated by killing the chrysalis by means of heat. Neither the male nor female moth take any food during their winged state, but after performing the offices of generation, and the female having laid numerous eggs, they both die. The eggs remain attached to paper or other matter during the winter, and are spontaneously hatched by the heat in the months of April or May of the ensuing year.

As soon as the worms have produced their cocoons, they become an article of trade; for in those countries where silk is cultivated, few persons reel off their cocoons, but sell them to others, who make this operation a separate business. The silk as formed by the worm, is so very fine, that if each cocoon were reeled separately, it would be totally unfit for the purposes of the manufacturer; in reeling, therefore, the ends of several cocoons are joined and reeled together out of warm water, which softening their natural gum, makes them stick together so as to form one strong smooth thread. As often as the thread of any single cocoon breaks, or comes to an end, its place is supplied by a new one, so that by continually keeping up the same number, the united thread may be wound to any length; the single threads of the newly-added cocoons are not joined by a tie, but simply laid on the main thread, to which they adhere by their gum; and their ends are so fine, as not to produce the least perceptible unevenness in the place where they are laid on. The apparatus for reeling, consists merely of a small open kettle of water, under which is a fire to keep it hot, and a reel of a very simple construction. When the skein is quite dry, it is taken off the reel, and tied and doubled into a hank. In this state, in which all the silk that is brought from India, and a considerable portion of what comes from Italy and other parts, arrives, it is called *raw silk*. The principal part of it is afterwards sent to a mill to be thrown: that is, to have two ends of it doubled, and twisted together, by which it is converted into tram, or *organzine*, according to the fineness of the silk, and the purposes to which it is intended to be applied in the manufacture.

The average length of the thread of a cocoon is about 500 ells, sometimes 1200 ells.

The culture of silk varies but little in different countries; it does not require any great degree of skill or a great capital. But although many attempts have been made to produce silk in this country, as an article of commerce, they have hitherto been unsuccessful. As an amusement, silk-worms may, however, be reared, and silk obtained with great ease. From experiments which we ourselves have made, we are disposed to think that our climate is itself too cold for the natural habits of the silk worm, and that the worm itself degenerates, when reared in this country, even supposing that the mulberry could be obtained in quantity sufficient, and in the perfection necessary for feeding it. Lettuce leaves, with which silk-worms have been occasionally fed, we consider a bad succedaneum for their natural food, the mulberry.

The quantity of silk imported and employed in our various manufactures is surprisingly great. The total exceeds on an average of the last thirty years, one million of pounds annually; varying in price from 20 to 60 shillings, or more, per pound.

SILPHA, or CARRION BEETLE, a genus of coleopterous insects comprising one hundred and twenty-three species, scattered over the globe; about thirty of them common to our own country. They are found for the most part under the loose bark of trees or on the half decayed carcases of animals upon which both the grub and the insect feed. The different species vary but little from each other, either in form or colour. In Britain, they may be seen early in the spring, beneath the loose bark of trees. The *vespillo*, is one of the most remarkable of the genus, in consequence of the shape of its antennæ. They have at their extremity, a reddish knob produced by four small plates strung through the middle, one upon the other; the last being thicker, forms a small sharp-pointed knob; head, thorax, and body black, charged with a few yellowish hairs; shells short, colour black, variegated with two transverse stripes.

SILPHIUM, a genus of plants comprehending eleven species, all natives of America. The following are cultivated; the *laciniatum*, or Jagged-leaved; the *terebinthinum*, or Broad-leaved, the *asteriscus*, or Hairy stalked, and the *trifoliatum*, or Three-leaved silphium. Most of these bear a corol, resembling the sunflower, and rise from a perennial woody root, with a thick, strong, upright stem, three or four feet high.

SILVER, or *argentum*, a metal of a pure white colour, and considerable brilliancy. Its specific gravity is 10,5. It is so malleable and ductile, that it may be extended into leaves not exceeding a ten thousandth of an inch in thickness, and drawn into wire considerably finer than a human hair. It melts at a bright red heat, and when in fusion appears extremely brilliant. It resists the action of the air at high temperatures, for a long time, and does not oxidize; but if an electric explosion be passed through fine silver wire, it burns into a black powder, which is an oxide of silver. Exposed to an intense white heat, it boils and evaporates. If suddenly cooled, it crystallizes during congelation, often shooting out like a small cauliflower, and throwing small particles of the metal out of the crucible.

Native silver has the character of the pure metal; it occurs in masses; and arborescent and capillary; and sometimes crystallized in cubes and octoedra. It is seldom pure, but contains small portions of other metals, which affect its colour and ductility. It is chiefly found in primitive countries. The richest mines of native silver are in Peru and Mexico. Silver is also found in Saxony, Bohemia, Suabia, and Norway. It has also been found in Cornwall and Devonshire. Silver is also found in combination with sulphur, arsenic, muriatic acid, gold, antimony, lead, &c.

Pure silver may be obtained by dissolving the standard silver of commerce in pure nitric acid, diluted with an equal measure of water. Immerse a plate of clean copper in the solution, which soon occasions a precipitate of metallic silver; collect it upon a filter; wash it with a solution of ammonia, and then with water, and fuse it into a button.

Silver readily combines with the greater number of the metals; of these the alloy with copper is of the most importance, as it constitutes *plate* and *coin*. See Steel. By the addition of a small proportion of copper to silver, the metal is rendered harder and more sonorous, while its colour is scarcely impaired.

The *standard* silver of this country consists of $11\frac{2}{20}$ pure silver and $\frac{18}{20}$ copper. A pound troy, therefore, is composed of 11 oz. 2 dwts. pure silver, and 18 dwts. of copper, and it is coined into 66 shillings.

An amalgam of silver is sometimes employed for plating: it is applied to the surface of copper, and the mercury being evaporated by heat, the remaining silver is burnished; but the better kind of plating is performed as mentioned under Plating.

A mixture of chloride of silver, chalk, and pearl-ash, is employed for silvering brass: the metal is rendered very clean, and the mixture moistened with water rubbed upon its surface. In this way, thermometer scales, and clock dials are usually silvered.

Nitrate of silver, formerly called *lunar caustic*, is made thus: Take of silver one ounce; of nitric acid one fluidounce; distilled water two fluidounces. Mix together the nitric acid and water, and dissolve the silver in the mixture, in a sand bath. Then gradually increase the heat that the nitrate of silver may be dried. Melt this in a crucible on a gentle fire, until the water being evaporated, the ebullition ceases; then directly pour it into proper moulds.

This fused nitrate of silver is usually obtained in the shops, in small solid cylinders, of a dark grey colour, and presenting, when broken across, a crystallized fracture. It is inodorous, has an intensely bitter, metallic, caustic, taste, and tinges the skin and hair black, wherever it touches. Its chief use is as a caustic for the destruction of fungous flesh, and in solutions, for the cure of strictures of the urethra, warts, fungous excrescences, and incipient tumours.

In solution, in the proportion of two grains to one fluidounce of distilled water, it forms a good injection in pustulous sores; and as a lotion, in that disease of the gums denominated scurvy. It has also been applied to the ear, for deafness, &c. See Ear.

It has been occasionally given internally as a tonic, and antispasmodic in doses of from one eighth of a grain, gradually increased to four grains, or more, three times a day, in epilepsy, St. Vitus's dance, &c. but the domestic prescriber should not meddle with it for such purposes.

When given in large doses, it acts as a poison on the system, producing symptoms resembling those induced by other corrosive poisons. See Corrosive Sublimate and Poisons.

Silver fir. See Pine.

SILVER FISH, or *Atherina menidia*, a species of the genus Atherina, of which five have been enumerated, inhabiting the different seas of the globe. The first-mentioned species is, however, the only one worthy of notice. It is an inhabitant of the fresh waters of Carolina, has a small pellucid body; scales spotted with black; teeth numerous on the lips, but none in the jaws, or tongue: lateral line silvery; tail forked. It is often introduced in our marble basons, and globular glasses for ornament.

SILVER TREE, or *protea*, a genus comprehending sixty-five species, having a one-seeded nut; they are almost all Cape plants, and may be thus subdivided;—leaves pinnate, filiform,—leaves toothed, callous,—leaves filiform, subulate,—leaves linear,—leaves elliptic and lanceolate,—leaves oblong, ovate,—leaves roundish.—The two following are cultivated: the *conifera*, or Cone-bearing protea, has an equal stem, three feet high, with whorled subdivided branches; leaves terminated by a smooth gland; cone tomentose, ovate, size of a pea; floral leaves concolour. The *argentea*, or Silver protea, has a strong upright stalk, covered with a purplish bark, dividing into several branches, which grow erect; leaves broad, shining, silvery, making a fine appearance, when mixed with other exotics; flowers in August. Both these are sometimes raised from cuttings, but more generally from seeds obtained from the Cape.

SILURE, or *silurus*, a genus of fishes, consisting of twenty-eight species, scattered through the rivers of the globe, distinguished by a naked, large, broad, compressed head; the mouth furnished with cirri, resembling the feelers of insects; gape very large, extending almost the whole length of the head; lips thick, jaws furnished with teeth; body elongated, compressed, without scales; these are thus divided; with two cirri— with four cirri—six cirri—eight cirri—cirrusless. The following are examples.

The *Glanis*, or European silure, has the dorsal fin single and unarmed; head subpatulate, dusky green; jaws arched; gullet with four prominent denticulate bones; pectoral fins yellow, base and tip bluish; body thick, mucous, greenish black, towards the belly, greenish; beneath white, with blackish and white spots; flesh good; inhabits deep fresh waters of Europe and the East, and grows to a vast size, sometimes weighing 300 pounds; swims slowly, and before a storm comes to the surface of the water.

The *Electricus*, or Electric silure, has the dorsal fins fleshy, single; body long, pale ash colour; length twenty inches; when touched, communicates a shock attended with trembling and pain in the limbs, but less violent than the torpedo, or electrical eel; flesh good.

The *Clarias*, is from twelve to fifteen inches long; body blackish ash, beneath hoary; inhabits the rivers of South America and Africa; said to inflict venemous wounds with the serrated pectoral fin.

The *Aspredo* is more than a foot long, and of a very uncouth and forbidding appearance; inhabits the rivers of America.

Simarouba. See QUASSIA.

Simpler's Joy. See VERVAIN.

SINAPISM, an external medicine, in form of a cataplasm, composed chiefly of mustard seed pulverized. See MUSTARD.

SINCERITY, freedom from hypocrisy; a strict adherence to truth. In the most extensive signification of the term, sincerity not only consists in never uttering what is false, but in never concealing what is true. See CANDOUR.

Sinew. See TENDON.

Singultus. See HICCOUGH.

Sinovia. See SYNOVIA.

SINUS, in anatomy, a cavity or depression. In surgery it means a long, hollow, narrow track, leading from some abscess, diseased bone, &c. The veins of the dura mater are also termed sinuses.

Siphilis. See SYPHILIS.

SIPHON, or SYPHON, in hydraulics, a bended pipe, one end of which being put into a vessel of liquor, and the other hanging out of the said vessel over another, the liquor will run out from the first into the last, after the air has been sucked out of the external or lower end of the siphon, and that as long as the liquor in the upper vessel is above the orifice of the syphon. This motion of water, or other liquid, through this instrument depends entirely on atmospheric pressure. Sometimes it may be inconvenient to suck out the air; in which case, filling the siphon with the liquid to be abstracted, and immersing it in a proper manner, will answer the same purpose.

SIREN, in zoology, a genus of animals of a doubtful order, but of a form and configuration approaching equally amphibious reptiles and fishes; but it is usually arranged under reptiles. Its generic characters are as follow: body two-footed, tailed, naked; feet furnished in the manner of arms, and furnished with claws. Three species, as follow:

The *Lacertina*, Lizard, or Eel-shaped siren, has the body eel-shaped; brachiæ ramified; gills external like a fish; feet like a reptile; lives generally under water, but sometimes appears on land; a foot and a half long; has a sort of squeaking voice; when thrown on the ground breaks in pieces like some of the serpents; inhabits muddy and swampy places in South Carolina; feeds on serpents: an account of the anatomy of this curious animal by Mr. J. HUNTER, is given in the Philosophical Transactions, Vol. LVI.

The *Anguina*, Anguine, or Austrian siren, is also eel-shaped; body cylindric, the tail progressively flattened towards the end, and terminating in a fatty fin; feet four; colour pale rose, flesh colour, or white; ramified, brachial fins bright red; skin smooth and even, the head somewhat depressed; snout lengthened, obtuse, widish; no external eyes; mouth moderately wide, and furnished with very minute teeth; legs about three quarters of an inch long; found only in the lake Zirxnitz, in Carniola; active in its native water.

The *Pisciformis*, Fish-formed siren, or Mexican tadpole, in its general appearance resembles the larve of the paradoxical frog; it has four feet; minute white specks scattered over the whole skin, resembling those on the *lacertina*; body deeply and thickly spotted; supposed to be a native of Mexico; and by some conjectured to be no other than the larve or tadpole of some large American lizard.

Siskin. See FINCH.

SIT-FAST, in farriery, a kind of horny scab, which forms on the skin in consequence of a saddle-gall. It should be rubbed with camphorated mercurial ointment until it is somewhat loose; it may then be removed by pincers, or gradually dissected off with a knife. The sore may be dressed afterwards with green basilicon, or a solution of sulphate of copper.

SIZE, a viscid preparation, consisting of the shreds and parings of parchment, leather, or vellum, boiled in water, and afterwards strained. It is employed by various artizans, but principally by painters and plasterers, who dilute it with a certain portion of water, and lay it on walls and ceilings before they are painted or white-washed; and also mix it with water colours in order that when dry they may not rub off. Size may be also made by simply dissolving common glue in water. See GELATINE.

For *Gold size.* See GOLD SIZE.

Silver size may be prepared by grinding small portions of black-lead and tobacco pipe clay, both being previously pulverized with a little Genoa soap; after which it is duly incorporated with common size.

Skate. See RAY.

SKATING, an exercise on ice both graceful and healthy; but as, in this country, the frost is not in general of such intensity as to make skating a safe recreation, we cannot recommend it.

SKELETON, in anatomy, the bones of the body preserved in their natural situation, with their natural ligaments, and deprived of their flesh. When the same bones are deprived of their natural ligaments, and hung in their respective situations by means of wires, they are then called an artificial skeleton; the former being called a natural skeleton.

SKIMMER, or *Rynchops*, a genus of birds, consisting of one species only, the *nigra*, or Black skimmer, a native of America and Asia. The bill is straight, the upper mandible much shorter; body blackish, beneath white; front and chin white; wings with a transverse white band; legs red. Another variety tawny; is perpetually flying about, and skimming over the water, out of which it scoops small fishes with its lower mandible.

SKIN, in anatomy, the general covering of the body.

The skin, though apparently a simple membrane, is in reality laminated, consisting of several subdivisions. The outermost lamen is termed *cuticula*, or scarf skin; it is this part of the skin which is raised in blisters. The second, lying immediately below the scarf skin, and on the true skin, has no English name, but is called by anatomists *rete mucosum*. The third is the *cutis*, or true skin.

The *scarf skin* is an insensible membrane, and is extended over every part of the true skin, unless where the nails are. It is composed of albumen. Its use is to defend the true skin, and to preserve it from wearing; it is thickest in those parts of the bottom of the foot which sustains the body, and in hands much used to labour, it always growing thicker the more those parts are used.

The *rete mucosum*, is a web-like, mucous substance, which is most considerable where the cuticula is thickest; it is this substance which gives chiefly the colour to the exterior of the human body; it is black in the negro, white, brown, or yellowish in the European. The colour of this and the cuticula being the only difference between Europeans, and Africans or Indians; the fibres of the true skin being white in all men. In the dead body, however, the skin is always of a white colour, let the colour of the *rete mucosum* be what it may.

The *cutis*, or true skin, is a very compact, sensible membrane, extended over all parts of the body, and has nerves terminating so plentifully in all its superficies for the sense of TOUCH, that the finest-pointed instrument can prick no where without touching some of them. The principal component of the true skin is gelatine.

The surface of the skin is extremely porous: more so in some places than in others, and the pores are also larger in some parts than in others: these pores are of great use and importance in the discharge of the perspirable matter from the body, and also in performing certain offices of absorption. Hence the necessity of CLEANLINESS for the due preservation of health.

The skin is endowed with intense sensibility; almost all the pain in the different operations of surgery, is past when the skin is divided: some parts of the skin have more feeling than others; on the lips, the tops of the fingers, &c. the sensations are exquisitely nice. The skin is liable to a variety of diseases; these will be found treated of in the order of the alphabet.

Skin. See GLUE, LEATHER, and TANNING.

Skink. See LIZARD.

Skip-Jack. See STICKLE BACK.

Skirret. See PARSNIP, THE WATER.

SKULL, SCULL, or *Cranium*, that part of the head which contains the brains. It consists of eight bones; namely, the *os frontis*, or bone which forms the upper and fore-part of the head; the *os occipitis*, forming all the back part of the head; the *os sphenoides* is of a very irregular figure, and seated in the middle of the basis of the skull; the two parietal bones, or *ossa bregmatis*, are two large bones which compose the superior and lateral parts of the skull; the *temporal bones* are situated below the parietal bones at the middle and lower parts of the sides of the skull. The *os ethmoides*, is a small bone about two inches in circumference, seated in the anterior part of the basis of the skull, being almost surrounded by the *os frontis*. The skin immediately surrounding these is called *pericranium*. These bones in infants are not only very soft, but are very loosely united, so that the skulls of very young children may be moulded by compression into a variety of shapes; hence some of the causes of the difference of the shape of the head in different nations; we may, however, be quite sure that such compression or moulding is improper. All tight bandages about the heads of young children who are healthy, should be avoided. As the child advances in growth, the bones, in general, unite so firmly as to become one solid bone.

The skull is liable to various accidents, the most serious of which are *fractures*. These are always attended with more or less danger, and for the cure of which an experienced surgeon should at once be called in. The usual symptoms of a fracture of the skull are, when the points of the bone may be sometimes felt; the patient is also affected with giddiness, stupefaction, and loss of sight; and when the concussion has been violent, blood is discharged from the eyes, nose, and ears. Should not the fracture be readily discoverable, a careful examination and pressure of the head in every direction should be made.

The diet, in fractures of the skull, should be of the lightest kind; no animal food should be eaten; nor should any fermented, spirituous liquors, or wine, be given; barley water, with a few grains of nitre, toast and water, and other weak diluents, may be taken occasionally. The patient should be kept extremely quiet; and cooling laxatives, which do not induce sickness, should be given to keep the bowels regular.

SKULL-CAP, or *Scutellaria*, a genus of plants, comprehending eighteen species, scattered over the globe; two common to the marshes and ditches of our own country. The following are cultivated the *integrifolia*, or Entire-leaved skull-cap, with ovate, entire leaves, and purple flowers, in long loose spikes; a native of North America; the *peregrina*, or Florentine skull-cap, with purple or white flowers; a native of Italy; and the *altissima*, or Tall skull-cap, with purple flowers and long tubes, a native of the Levant.

The *laterifolia*, another species, a native of Canada and Virginia, has been lately used in America as a remedy for the bite of a mad dog. See HYDROPHOBIA.

The three first-mentioned species may be raised from seeds, sown either in the spring or autumn, in the places where they are to remain. They are agreeable in borders and clumps.

Sky lark. See LARK.

SLATE, CLAY-SLATE, or *Ardesia*, a genus of argillaceous earths, consisting of alumina and silica, with generally a little oxide of iron, carbonate of lime, and sometimes magnesia and petroleum. Its usual colours are various shades of grey, and it is generally so soft as to yield to the nail. The varieties of slates are applied to various useful purposes; that which is easily separable into thin plates, compact, sonorous, and not injured by the application of a moderate heat, is employed for roofing houses. London is chiefly supplied from Bangor in Caernarvonshire, and from Kendal in Westmoreland; it also abounds in various parts of Scotland: the quarry of slate at Luss, is of considerable geological interest.

Other varieties of slate are used for writing slates, slate pencils, &c. And where it is very abundant, it is sometimes employed for monumental tablets, pavements, and walls. The slates containing embedded matters, are called *grawacke slates*, or when of a less slaty fracture, simply GRAWACKE.

The slate district in England is of considerable extent, and neither wants sublimity nor grandeur. It follows the great primary chain running north and south upon the west side of England. In Cornwall the slate is immediately incumbent on granite, it is here, also, sometimes called *kellas*. The slate districts of Wales are of singular interest and magnificence; Snowdon, Plynlimmon, and Cader Idris, and the neighbouring passes and valleys, have all the peculiarities which slate confers.

SLAG, a term used by smelters and workers in minerals, for any hard, vitreous coloured, and opake mass, produced by the fusion of any stony or metallic mixture. Slag differs from scoria in being more dense and more completely vitrified; scoria being, also, more light and porous. They both are excellent materials for the formation of roads. Slag is sometimes cast into moulds; it then forms a durable material for building, the tops of walls, &c.

SLEEP, or *Somnus*, that state of the body in which the internal and external senses and voluntary motions are not much, if at all, exercised. By sleep, and, of course, rest, the vital energy of which the body is deprived during the day, by various exciting and exhausting powers, is again accumulated, and we arise refreshed and vigorous.

The speculations relative to the causes of sleep, have been extremely fanciful and various; it will answer no practical purpose for us to enumerate them; although it results, most probably, from full and slow circulation in the brain, proceeding from a spontaneous relaxation of the central vessels, occurring simultaneously with a retarded pulse, and diminished action of the heart. Nor do we think our readers will be much benefited by our laying down for them, a series of precise rules for their waking and sleeping periods. A habit, however, of sleeping in any period of the day, even for only a short time, is, we believe, a very bad one, and should be avoided by every one who does not desire to pass a restless and a sleepless night. There may be some exceptions to this rule, relative to the sickly, the aged, and the infirm; but no person in good health, and not aged, should ever indulge in diurnal sleep.

The quantity of sleep necessary for the due accumulation of the exhausted energies of the body, will be found as variable as the habits, tempers, and dispositions of man; nature, in general, should be our directress; yet it is well known that long habit may reconcile the system to four hours' sleep, where, in another case, double that number of hours may be absolutely necessary. It may, however, be important to remark, that a considerable deficiency of the *usual* quantity of exertion will frequently produce an inconvenient and disturbed sleep; an *extraordinary* and *unusual* quantity of labour will sometimes produce the same effect. In order, therefore, to guard against a disturbed and sleepless night, it is of no trifling moment, particularly with the valetudinarian, to take care that his exertion and inaction should be so measured as not to produce these unpleasant consequences. But the more common causes of disturbed sleep arise unquestionably from the state of the digestive functions. If more attention were paid to the state of the stomach, and care taken not to load it with heavy suppers, malt, and other fermented liquors, a short time only before our retiring to repose, we should not so often hear of disturbed nights, frightful dreams, and the distressing consequences of dyspeptic derangement.

Our sensations generally determine for us, almost involuntarily, the most easy posture of the body during sleep; but, from our anatomical structure, the most healthy position will be commonly found on the right side: this arises, most probably, from the contents of the stomach being, in this position, more easily propelled through the pylorus into the intestines.

The time and the hours of sleep for the robust and those in good health, may be sometimes varied in every possible way; and yet such is the elasticity or energy of nature in such constitutions, that it still continues tense. It should not be forgotten, however, that the tension is, notwithstanding, limited; and that *moderate and regular use* of both our mental and bodily functions, with suitable alternations of repose, and more especially regular sleep, promises to be the most advantageous for health and long life. See BED, BED-TIME, DAY, DREAMS, INCUBUS, and SOMNAMBULISM; see also a valuable paper by Dr. PARK on sleep, in the 16th number of the *Journal of Science and the Arts*.

Sleep, walking in. See SOMNAMBULISM.

SLIDING RULE, a mathematical instrument, serving to perform computations in gauging, measuring, &c. without the use of compasses, merely by sliding the parts of the instrument one by another, the lines or divisions of which give the answer or amount on inspection.

This instrument is variously contrived and applied by different authors, particularly Gunter, Partridge, Hunt, Leadbetter, Symons, Everard, and Coggeshall; but the most usual and useful ones are those of the two latter.

Slipper, Lady's. See LADY'S SLIPPER.

SLIPPER WORT, or *Calceolaria*, a genus of plants, comprehending nine species, almost all natives of Peru; generally with yellow, clustering flowers, some of which are beautiful and well worth cultivating.

SLOE, the fruit of the black thorn, or wild plum. It contains some astringent properties, but is of little importance in any way. See PLUM.

SLOTH, or *Bradypus*, a genus of animals, consisting of three species, distinguished by being fore-toothless; grinders six in each jaw; body covered with hair. They are as follow:

The *Tridactylus*, or Common sloth, has the feet three-toed, tail short; feeds on fresh leaves, never drinks, is fearful of rain; climbs easily; walks painfully and slowly, hardly travelling fifteen yards in a day; cry miserable; tears pitiful; body very hairy, grey; face naked; throat yellow; earless; fore-feet longer than the hind; teats two, pectoral; mouth never without foam; tail subovate; size of a smallish dog; inhabits the warmer parts of South America.

The *Didactylus*, or Two-toed sloth, has the fore-feet two-toed; tailless; not so slow in motion as the last; length eleven inches; inhabits South America and India; in this and the last species there is only one common excreting canal as in birds.

The *Pentadactylus*, or Five-toed sloth, has five toes on all the feet; tail short; a heavy, clumsy, though not ferocious animal, of a mixed resemblance between the bear, the sloth, and the hog; when irritated, gives a short harsh cry; catches what is thrown to it with its paws, and carries it to its mouth; eats bread, fruit, eggs, but not roots; moves quick; length about four and a half feet, height about three, circumference nearly five.

Sloth. See DISPATCH and EMPLOYMENT.

Slow worm. See BLIND WORM.

Slug. See SNAIL.

Smallage. See CELERY and PARSLEY.

SMALL-POX, or *Variola*, an eruptive, highly contagious, and often fatal disease, distinguished by fever, and on the third day an eruption of red pimples, which on the eighth day contain pus, and drying, fall off in crusts, often leaving various parts of the body much disfigured, and more especially the face. It is distinguished also into *distinct* and *confluent*: in the former the eruptions are perfectly separate from each other; in the latter they run much into one another. Both species may be produced either by breathing air impregnated with the effluvia arising from the bodies of persons who labour under the disease, or by the introduction of a small quantity of the variolous matter into the habit by *inoculation*: it is probable, however, that the difference of the small-pox is not owing to any difference in the contagion, but depends on the state of the health of the person to whom it is applied; or on certain circumstances concurring with the application of it. It attacks persons of all ages and sexes, but the young are more liable to it than those who are much advanced in life. It may prevail, also, at every season of the year, but, in general, is most prevalent in the spring and summer.

When the disease has arisen naturally, and is of the distinct kind, the eruption is commonly preceded by a redness of the eyes, soreness of the throat, pains in the head, back, and loins; weariness, faintness, alternate fits of chilliness and heat, thirst, nausea, inclination to vomit, and a quick pulse. In some cases, these symptoms prevail in a high degree, in others they are very moderate and trifling. In very young children, startings and convulsions are apt to take place a short time previous to the appearance of the eruption; but the symptom is not, in general, alarming.

About the third or fourth day from

the first attack, the eruption appears in little red spots, similar to flea-bites, on the face, neck, and breast, and these continue to increase in size and number for three or four days longer, at the end of which time they are often dispersed also over several parts of the body.

If the pustules are not very numerous, the febrile symptoms generally go off on the appearance of the eruption, or they will become very moderate. Erysipelatous spots are sometimes interspersed amongst the pustules, but these generally go off as soon as the suppuration commences, which is usually about the fifth or sixth day, at which period a small vesicle, containing an almost colourless fluid, appears on the top of each pimple. The suppuration is generally completed about the eighth or ninth day, when the pustules will be filled with yellow matter; but should they run much into each other, it will not be completed for some days later.

When the pustules are very thick and numerous on the face, it is apt, about this time, to become much swelled, and the eye-lids to be closed up, previously to which, there usually arises a hoarseness and difficulty of swallowing, accompanied with a discharge of viscid saliva. About the eleventh day, the swelling of the face usually subsides, together with the affection of the throat, and is succeeded by the same in the hands and feet, after which the pustules break and discharge their contents, and then becoming dry, they fall off in crusts, leaving the skin of a red colour, which appearance continues for some days.

In the confluent small-pox, the fever which precedes the eruption is much more violent than in the distinct, being attended with great anxiety, heat, thirst, nausea, vomiting, a frequent pulse, coma, or delirium. In infants, convulsive fits are apt to occur, which either prove fatal before any eruption appears, or they usher in a malignant species of the disease.

The eruption usually makes its appearance about the third day, and is frequently preceded by, or attended with, a rosy efflorescence, similar to that which occurs in the measles; but the fever, although it suffers some slight remission on the coming on of the eruption, does not go off as in the distinct kind; on the contrary, it becomes increased after the fifth or sixth day, and continues considerable throughout the remainder of the disease. As the eruption advances, the face being thickly beset with pustules, becomes very much swelled, the eye-lids are closed up, so as to deprive the patient of sight, and a gentle salivation comes on, which, towards the eleventh day, is so viscid as to be spit up with great difficulty. In children a diarrhœa, instead of a salivation, usually attends this stage of the disease. Although the vesicles on the top of the pimples are to be perceived sooner in this complaint than in the distinct small-pox, yet they never rise to an eminence, being usually flattened in; neither do they arrive at a proper suppuration, as the fluid contained in them, instead of becoming yellow, turns to a brown colour.

About the tenth or eleventh day, the swelling of the face usually subsides, and then the hands and feet begin to puff up and swell; about the same time, the vesicles break and pour out a liquor, that forms brown or black crusts, which, falling off, leave deep pits which continue for life; and when the pustules have run much into each other, they disfigure and scar the face, and other parts of the body, very considerably.

It sometimes happens that putrescency, at an early period of the disease, is evinced by livid spots interspersed among the pustules, and by a discharge of blood by urine, stool, and various parts of the body.

In the confluent small-pox, the fever, which sometimes slightly remits from the time of the appearance of the eruption to that of its maturation, is often renewed with considerable violence at the last-mentioned period, and is then called the secondary fever: this is the most dangerous stage of the disease. It usually proves fatal between the eighth and eleventh day; but, in some cases, death is protracted till the fourteenth or sixteenth. And it should not be forgotten that, if the confluent small-pox prove not immediately mortal, it is very apt to induce various other diseases; indeed, both kinds of the small-pox leave behind them a predisposition for various complaints: for ophthalmia, and visceral inflammation, more especially of the thorax; and they not unfrequently excite scrofula into action, which might have otherwise remained dormant in the system. And, notwithstanding the general opinion that the small-pox affects the same constitution only once, it is now indisputably proved that many persons have had it twice; and that, on a second attack, it has not only been severe, but, sometimes, has proved fatal.

Such is the history of this disease! Surely our readers cannot for one moment hesitate in taking every means in their power to annihilate so loathsome, so dangerous, and so destructive a pestilence. The means are at once so simple, so expedient, and so powerful, that we hope we need not do more than direct their attention to the COW-POX. Inoculation for the small-pox has, it is true, disarmed it of some of its terrors and its mischief; but inoculation almost inevitably propagates the disease; and, although the parent of an inoculated child may rejoice that his favourite has escaped, *how many children may receive the infection from the inoculated child and die*, is a thought which should vibrate at the heart of every one who propagates this dreadful scourge, even by inoculation.

As, however, this disease sometimes occurs in defiance of all our precautions to prevent it, it may be useful to observe, that in the *distinct* small-pox, every thing in the shape of stimulants should be avoided; that the bowels should be kept relaxed by cooling purgatives; that cold air, and cold and acidulous drink, should be freely administered. If, after the eruption, the fever still continue, the avoiding of heat, and the continuing to expose the body to cold air, will still be proper. And, if the fever be considerable in an adult person, bleeding may be necessary; but certainly a cooling purgative. A laxative clyster may be also advantageous.

In the *confluent* kind, our chief attention must be directed to support the strength of the system, and to obviate the tendency to the great depression of strength and putrefaction of the fluids; for this purpose, cordials, wine, bark, mineral acids, nourishing diet, and by all the means recommended in the treatment of typhus, except the application of cold-water, to the surface of the body, after the appearance of the eruption; the bowels should be kept regular by the mildest cathartics, or by laxative clysters. When the disease is attended with violent symptoms, blisters should be applied in succession on different parts of the body, without regard to the part being covered with pustules. If there be obstinate vomitings, saline draughts should be given, in a state of effervescence; camphor combined with opium; or strong beef tea. When the eruption disappears or recedes, wine, opium, ammonia, and camphor, must be given to excite the dormant energies of the system. In some cases, notwithstanding what we have said above, where there is great heat of the body, an affusion of cold-water, or rather an application of cloths dipped in cold water, may be advantageously made to the whole surface of the body. But this, as indeed the whole treatment of this dangerous malady, should be under the direction of an experienced physician.

In concluding this article, perhaps we cannot more effectually serve the interests of society than by presenting our readers with results, drawn from a paper by Sir GILBERT BLANE, recently published in the tenth volume of the Transactions of the Medical and Chirurgical Society of London, intitled a *Statement of Facts tending to establish an estimate of the true value and present state of Vaccination.*

Sir GILBERT observes, that it is almost needless to premise that the small-pox is of all maladies that which, during the last thousand years, has destroyed the largest portion of the human species, and been productive of the largest share of misery.

There is, perhaps, no disease over which medical art has less power; unless we except the inoculation of it with its own virus. But though the beneficial effect of this on those on whom it is actually practised is admissible, it has no tendency, like the Cow-Pox, to extirpate the disease; and, from the impossibility of rendering it universal, it has actually been found to add to the general mortality of small-pox, by opening a new source of diffusion of its virus.

In order to bring this to the test of calculation; in order, also, to institute a comparison of the mortality of small-pox as influenced by vaccination, as well as by inoculation itself, four periods of fifteen years each, have been selected from the bills of mortality, in order to exhibit the mortality of small-pox in each of these series in regard to each other. The first series is the fifteen years immediately preceding the introduction of inoculation for the small-pox; that is, from 1706 to 1720, both included. The second is taken at the middle of the last century, when inoculation had made considerable progress. The third comprises the fifteen years, previous to the introduction of vaccination, when inoculation had made still greater progress. The fourth series comprises the time in which the cow-pox inoculation has been so far diffused as to produce a notable effect on the mortality of small-pox: that is, from 1804 to 1818. The results of these computations are as follow:

Ratio of the mortality of small-pox to the total mortality.

From 1706 to 1720, 78 in 1000
From 1745 to 1759, 89 in 1000
From 1785 to 1798, 94 in 1000
From 1805 to 1818, 53 in 1000

Assuming, therefore, that vaccination had not been practised the last fifteen years, and that the mortality from small-pox within the bills, had in that time, that is, from 1804 to 1818, been the same as from 1784 to 1798, that is 27,569 in place of 14,716; and assuming that there has been the same proportional diminution of deaths in the districts without the bills, and among the unregistered subjects, the account of the lives saved in this metropolis by vaccination in these fifteen years will stand as follows:

Within the bills of mortality	12,853
Without the bills of mortality	2,570
Unregistered cases . . .	7,711
	23,134

Can we desire any further evidence of the value and importance of the *cow-pox inoculation?*

We have not enlarged on the method of inoculation for the small-pox, conceiving that the directions given for the inoculation of the cow-pox are quite sufficient for the purpose of both diseases. But as the inoculation for the small-pox will require a choice of season, state of health, and other circumstances, not so readily judged of by the domestic prescriber, we recommend, whenever the operation should be thought expedient, (we hope it never may) recourse to the best medical advice at once.

Smalt. See Cobalt.

Smear Dab. See Flat-Fish.

SMELL, or Smelling, that sense by which we distinguish the odour of different substances. The sense of smelling is performed by means of a soft, pulpy, vascular, papillous, porous membrane, which lines the whole internal cavity of the nostrils, and is thicker upon the septum and principal cavity of the nose, but thinner in the sinuses. It is plentifully supplied with very soft nerves.

We are ignorant of the reasons why some smells please and others displease. The action of smells is strong, but of short continuance. They appear, however, to act almost directly on the brain; hence the deleterious as well as refreshing action of many odours. See Odour.

Smelt. See Salmon.

Smew. See Merganser.

SMILACINA, a genus of plants, consisting of two species; the *umbellata*, or Umbel-flowered smilacina; and the *borealis*, or Northern smilacina. The first is a native of the Alleghany mountains; the second Nova-Scotia and Newfoundland; both are hardy, and bloom together in June.

SMILAX, a genus of plants, comprising twenty-three species, natives of the East or West Indies, or America; one of the south of Europe, one of Syria, one of New Holland. They are thus sub-divided: stem prickly, angular;—stem prickly, round:—stem unarmed, angular. The following are cultivated: the *aspera*, or Rough, the *excelsa*, or Tall; the *sarsaparilla*, or medicinal; the *laurifolia*, or Bay-leaved; the *tamnoides*, or Black-Briony-leaved; the *herbacea*, or Herbaceous; the *China*, or Chinese, and the *pseudo-China*, or Bastard China smilax.

The roots of the China species were formerly in great medicinal repute; but neither these, nor the roots of the SARSAPARILLA, although this last is still retained in the pharmacopœias, are of much importance.

Sarsaparilla is a perennial plant, a native of South America and Virginia, and flowering in July and August: it delights in low moist grounds, near the banks of rivers. The roots run superficially under the soil, and the gatherers have only to loosen the soil a little, when a great length of the fibres may be drawn out with a wooden hook. Thus collected, it is cleared of its mud, dried, and made into bundles. The dose of the powdered root is from one scruple to a drachm, given three or four times a day, as a demulcent and diuretic, and in lues venerea; but it is of doubtful efficacy. The following are ordered by the London College:

Decoction of Sarsaparilla. Take of sarsaparilla root, sliced, four ounces; boiling water four pints. Macerate for four hours in a vessel lightly covered, and placed near the fire; then take out the sarsaparilla and bruise it. Return it again to the liquor, and macerate in a similar manner for two hours more; then boil it down to two pints and strain. This decoction may be regarded as merely a solution of mucus, and a simple demulcent.

Compound decoction of Sarsaparilla: Take of the preceding decoction o sarsaparilla, boiling, four pints; sassafras root, sliced, guaiacum wood, rasped, liquorice root bruised, of each one ounce; of the bark of mezereon root three drachms. Boil for a quarter of an hour and strain.

This decoction is an imitation of the once celebrated *Lisbon diet-drink*. Its efficacy chiefly depends on the mezereon-root bark. It operates as a diaphoretic and alterative, in some cases of syphilis, chronic rheumatism, in leprosy, and some other cutaneous affections. The dose is from four to six fluidounces, taken three or four times a day.

The China smilax has roundish, prickly stalks, and red berries, and is a native of Japan and China. The pseudo-China has round, smooth stalks, and black berries; it grows wild in Jamaica and Virginia, and bears the cold of England without injury. The two last should be increased by layers of the young shoots, and dividing the roots. All the rest may be propagated by slipping the roots, by layers and seeds.

SMOKE, an offensive vapour arising from the combustion of coal, wood, &c., too well known to need description.

Under the articles CHIMNEY and FIRE-PLACE, we have pointed out the best means of obviating the inconveniences arising from smoke. But since those articles were written, and that also on LIGHT, the method of Mr. PARKS, of Warwick, for the consumption of smoke, has been made public, by the enrolment of his patent, an account of which, with a plate, will be found in the *sixth* number of the *London Journal of Arts and Sciences*, whence the following account is taken.

The principle of Mr. PARKS's Patent for *Lessening the consumption of fuel in steam-engines and furnaces in general, and for consuming smoke*, consists in exposing the whole column of smoke emitted from the furnace again to the action of the flame of the same furnace, by which the greater part of it becomes consumed. The boiler, which may be of the ordinary construction, has flues passing round and under it, and the brick-work is so contrived that the boiler is supported at its angles only, in order that the flame may pass freely under and round it. The chimney is placed in the ordinary manner. A passage, or channel, through the brick-work beneath the furnace, admits a current of atmospheric air from the uninclosed ash-pit; this current is carried to that part of the flue through which all the smoke and other effluvia, from the fire must pass. The greater force of cold dense air, rushing into the rarified flue at that point, drives back the smoke and light vapour again into the furnace, by which its inflammable particles become ignited, and the principal part of the gas and soot arising from the combustion of the coal, which in ordinary fires is suffered to escape, becomes, by these means, consumed. The heat of the fire under the boiler is thus also greatly increased; a consideration in the saving and consumption of fuel, of no trifling moment. This invention has received the sanction of intelligent persons, who have witnessed its operation; it has even been mentioned in parliament. It is our duty, however, to observe, without at all desiring to lessen the merits of Mr. Parks, that the idea of the consumption of smoke in this manner is not new: it is mentioned in the Transactions of the French Academy of Sciences, for 1686. The person who suggested that method was a M. DALESME. It appears, also, that a patent very similar to Mr. Parks's, was taken out by Mr. JOSEPH GREGSON, in 1816.

SMOKE-JACK, a machine fixed in the chimney for the purpose of roasting meat, &c.

It is constructed thus: an upright iron spindle, placed in the chimney, which is made of a circular form at that particular part, turns on two pivots. The upper one passes through an iron bar, which is built-in across the chimney; and the lower pivot is of tempered steel, and is conical, or pointed, resting in a conical bell-metal socket, fixed on another cross bar. On the upper part of the spindle is a circular fly, consisting of 4, 6, 8, or more, thin iron plates, set obliquely on the spindle, like the sails of a wind-mill. Near the lower end of the spindle is a pinion, which works in the teeth of a contrate, or face-wheel, turning on a horizontal axis. One pivot of this axis turns in a cock fixed on the side-wall of the chimney; so that this axle is parallel to the front of the chimney. On the remote end of this horizontal axle there is a small pulley, having a deep angular groove. Over this pulley a chain passes, in the lower bight of which hangs the large pulley of the spit. This end of the spit turns loosely between the branches of the fork of the rack, but without resting on it. This is on the top of a moveable stand, which can be shifted nearer to, or farther from the fire. The other end turns in one of the notches of another rack. The number of teeth in the pinion and wheel, and the diameters of the pulleys, are so proportioned that the fly makes from 12 to 20 turns for one turn of the spit.

SMOKING, a practice of consuming tobacco, and other dried vegetables, by which the cut leaves, being previously put into a pipe, are kindled, and the fume, or smoke, after being inhaled, is discharged through the mouth.

Whatever may be the supposed advantages of smoking, and we believe they have been greatly over-rated, the constant practice of this dirty and disagreeable domestic annoyance, must necessarily preclude its utility as a medicine. Whilst we are willing to admit that its occasional use may, possibly, be of service to some constitutions, on the other hand, it too often produces torpor and inactivity, and incites to the pernicious practice of drinking malt and other fermented liquors in excess, than which nothing can be more degrading and improper. Independent of this, smoking is altogether so vulgar an employment, and withal so dirty, that we only wonder it has been so long tolerated in any civilized community. Surely men may easily find more rational amusement than smoking.

SMOKING, in domestic economy, a mode of preserving meat, such as ham, bacon, beef, &c., by previously salting, and then exposing them to the smoke arising from a *wood* fire. Since the discovery of the pyrolignous acid, the properties of wood-smoke for the preservation of animal food have been better understood. We do not, however, think, that all the uses to which smoking, and the pyrolignous acid may be applied, have been yet discovered. Is it not very probable that animal food may be preserved by first immersing it, for a very short period, in a solution of pyrolignous acid, and afterwards, by drying it in wood-smoke, so as to retain its nutritive properties, in a superior way to that in which they are retained by salting? See VINEGAR.

Smooth Hound. See SHARK.

SMUT, a disease to which wheat is liable; it consists in a degeneracy of the grains, by which the substance that should form flour becomes entirely changed into a black powder, similar to that found in a puff-ball, or dusty mushroom. It was formerly so common, that in some countries it was not unusual to see twice or thrice as many smutted ears of corn as sound ones. Fortunately, the means of preventing it have been long in the power of every farmer;—for any operation that completely frees the seeds from the smutty powder, the source of the infection, or that destroys it by acids, corrosive or poisonous applications, will effectually secure a clean crop.

Various methods have been adopted for the prevention of smut. The first practice necessary is, when the wheat seed is first put into any liquid, to run it *very gently* through a riddle, when not only the smut balls, but the imperfect grains, and the seed of weeds will float, and may be skimmed off at pleasure.

Pure cold water and lime, or pure cold water alone, will free the seed wheat from the smut, provided it be washed in several waters, repeatedly changed until it be perfectly clean, and then dried with quick-lime, slacked either with sea or with boiling water.

A mixture of *boiling water and lime*, when properly applied, is found also to be effectual. This may be done in different ways: sometimes chalk-lime recently burnt, is put into a copper of boiling water, and as soon as the lime is dissolved, the mixture, at this degree of heat, is poured upon the wheat, previously spread upon a stone floor, and the wheat and mixture are immediately well turned together with shovels. Or the wheat may be put into a common wicker basket, and dipped two or three times in a mixture of hot water and quick-lime. Or boiling water and quick-lime may be used, after the seed has been well washed and skimmed.

A still more effectual practice is said to be by using either fresh water so impregnated with salt that an egg will float in it, or of sea water, with such a quantity of salt dissolved in it, as to be equally strong, by which its specific gravity will be so increased that all unsound grains will swim in the pickle, when they may be skimmed off. The seed wheat is then to be separated from the pickle, and a sufficient quantity of new slacked lime, to dry the whole, sifted upon it.

Sprinkling the heap of seed wheat with *stale urine*, and then drying it with lime, if carefully done, has also been found an effectual remedy for the smut. Various other steeps and practices have been recommended, as soap-boilers' ley, a ley of wood ashes, lime water, powdered wormwood in stale urine, and kiln-drying the seed, which, though a hazardous, is, when properly executed, a successful mode of preventing smut. Or, lastly, a solution of *sulphate of copper*, made by dissolving three ounces in three gallons of water, for every three bushels of grain to be prepared, is considered an *infallible* remedy. The liquid should be put into a vessel capable of holding from sixty to eighty gallons, in such a quantity, that when three or four bushels of wheat shall be poured into the prepared liquor, it will rise five or six inches above the corn. The grain should be frequently stirred, and all that swims on the surface carefully removed. After the wheat has remained half an hour in this preparation, it should be taken out of the vessel and thrown into a basket that will allow the water, but not the grain, to escape. It should then be immediately washed in rain or pure water, to prevent its injuring the grain. The seed ought afterwards to be dried, either with or without lime before it is sown. The grain should not be put into the prepared liquor, unless it has been well dressed and is *thoroughly dry*.

The same water should never be used but once in washing wheat; the same rule holds good relative to brine. Great care should be taken not to thresh clean wheat on a floor where smutty wheat has been threshed; nor to keep or convey the seed in a sack in which smutty wheat has formerly been. It is, however, said, that all precaution will be vain, if the land be manured with dung made from straw, where the crop was infected.

It may be proper to add, that the operation of steeping should be extended to other grains besides wheat. When the weather is dry at seed time, every species of grain ought to be steeped, that a quick vegetation and more uniform growth may be promoted. And if the seeds of barley and oats, as well as wheat, were clothed with saline particles, they would be either preserved entirely from the attacks of vermin, or destroy such as may venture to eat them.

SNAIL, or ***Helix***, a genus of testaceous univalve worms, comprehending two hundred and sixty-seven species, scattered over the globe, of which about forty are common to our own country. They are subdivided into, whorls with a carinate acute margin;—umbilicate, the whorls rounded;—rounded, imperforate;—tapering;—ovate imperforate. The following are the chief:

The ***Pomatia***, with a sub-umbilicate, sub-ovate, obtuse shell, with a roundish semilunar aperture; reddish brown, with obsolete, palish bands. Four varieties. Inhabits the woods of Europe; and was, it is said, first introduced into England by Sir Kenelm Digby, for medical purposes. It is used in many parts of Europe as an article of food during Lent. It was also used by the Romans as a favourite dish. It is oviparous; very tenacious of life, and towards winter covers its aperture with a calcareous lid.

The ***Nitens***, has a horny, yellowish, green shell; inhabits the wet woods of Europe.

The ***Hortensis***, or Garden snail, sometimes called House snail, is too well known to need description. Inhabits Europe, in gardens and orchards, and is extremely destructive to fruits and tender leaves; sometimes eaten by the common people. They retreat in the winter to some dry covering, frequently in large numbers; the entrance to their shells being sealed up by a kind of membrane. Eggs round, semi-transparent, size of a small pea.

The ***Jacintha***, is a marine snail, about an inch broad and high. Shell violet, with a subtriangular aperture; when alive, emits a phosphorescent light, and shines in the dark; it stains the hands with a violet or purple dye; inhabits most seas.

The snail not only has other small animals living on the surface of its body, as lice, &c. but it is also infested with intestinal worms.

SNAIL, the SLUG, NAKED SNAIL, or *Limax*, a genus of molluscous worms, consisting of fifteen species, six common to our own country. The following are the chief: the *ater*, or Black slug, has the body black, and furrowed with deep wrinkles; four or five other varieties, from a little variation in the colour; found in woods, meadows, fields, gardens, &c.; from one and a half to five inches long. The *agrestis*, or Rustic slug, has the body whitish, with black feelers; several varieties. The variety having a yellowish shield, and, perhaps, several others, has a power of secreting a large quantity of mucus, and forming it into a thread like a spider's web; by these means it often suspends itself, and descends from the branches of trees. The variety with scattered black specks, has been occasionally swallowed by consumptive persons; but we presume mucilage may be obtained in a more agreeable shape.

The best preventive of the ravages of both the garden and slug snails, is slacked lime, or sifted coal ashes; the lime is most effectual when sprinkled on the plants. They cannot easily crawl over coal-ashes, and, therefore, these should be sprinkled on the surface of the ground, and on the paths. But the best method of destroying them, is collecting them by the hand and pouring boiling water on them.

Snake. See SERPENT.

SNAKE-GOURD, or *Trichosanthes anguina*, a species of the genus TRICOSANTHES, of which seven have been enumerated; one a native of St. Domingo, the rest of the East Indies. The first-mentioned species is a Chinese annual, with round, oblong, incurved fruit, occasionally found in our own gardens.

SNAKE ROOT, VIRGINIAN, the root of the *Aristolochia serpentaria*, a native plant of North America, from Pennsylvania to Florida, and flowers in August. The root is perennial, and consists of several bundles of fibres attached to a contorted horizontal trunk, from which several stems arise, about ten inches in height, slender, crooked, and jointed. The leaves are thin, cordate, entire, pointed, trinerved. The flowers are brownish purple.

The dried root is brought to this country in bales; it has an aromatic odour, somewhat like valerian, but less disagreeable; and a sharp, warm, bitter taste, resembling, in some degree, camphor. It is a stimulating diaphoretic and tonic, and is beneficially employed in typhous fever. It is also found to increase the efficacy of the bark in agues. See AGUE. It should never be given in an inflammatory state of the system. It may be administered in substance, or in *infusion*, made by macerating four drachms of the bruised root in twelve fluidounces of boiling water, in a covered vessel, for two hours, and straining. It should not be given in decoction, as boiling dissipates its essential oil, on which the virtues of this root chiefly depend. The dose of the powdered root is from ten grains to twenty, or even thirty; of the infusion, from one and a half to two fluidounces every fourth hour.

Tincture of snake-root: Take of snake-root bruised three ounces; proof spirit two pints. Macerate for fourteen days, frequently shaking, and filter. This is a useful addition to the infusion of bark in typhous fevers, gout, and periodic head-ach. The dose is from half a fluidrachm to two drachms; when taken in water it may be given in still larger doses.

Snake-root, the rattle. See RATTLE-SNAKE ROOT.

SNAKE STONE, SERPENT-STONE, or *Cornu ammonis*, a species of petrified nautilus, found in various parts of this country.

Snake weed. See POLYGONUM, BISTORT, and BUCK-WHEAT.

SNAP-DRAGON, TOAD-FLAX, CALF'S SNOUT, or *Antirrhinum*, a genus of plants, consisting of seventy species, which may be thus subdivided: leaves angular, capsules many-valved,—leaves opposite, capsules many-valved,—leaves alternate, capsules many-valved,—corols without spur, capsules perforated with three pores,—leaves pinnatifid. Every quarter of the globe affords some of this numerous species. Those indigenous to our own country are the *cymbalaria*, or Ivy-leaved toad-grass, found on old walls;—the *spurium*, or Round-leaved fluellin, found in corn-fields;—the *repens*, or Creeping toad-flax, found on chalk hills;—the *minus*, or Small toad-flax, found in corn-fields;—the *linaria*, or Common yellow toad-flax, found in hedges;—the *majus*, or Greater snap-dragon, found on old walls;—the *orontium*, or Small snap-dragon, or Calf's snout, found in corn-fields;—the *arvense*, or Corn blue toad-flax, found also in corn-fields. Some of these are ornamental flowers, and are most readily propagated by seeds. But except as flowers, none of the tribe are of any importance. They may possibly, however, be useful in dyeing.

Sneeze-wort. See YARROW.

SNEEZING, a convulsive motion of the muscles of the breast, whereby the air is expelled from the nose with much vehemence and noise. It is produced by an irritation of the upper membrane of the nose, either by acrid substances floating in the air, or by stimulating medicines, or *errhines*.

Sneezing may be sometimes advantageously excited in certain affections of the head, eyes, &c. or when foreign bodies have been accidentally introduced into the nostrils of children. But it is, nevertheless, an effort, that if made often and long continued must do harm, and, therefore, it ought never to be wantonly resorted to.

Snipe. See CURLEW.

SNOW, a well-known substance, formed by the freezing of water in the atmosphere. The chief use of snow appears to be to shelter wheat and other vegetables from the severity of winter frost; as it is rarely colder than the freezing point below its immediate surface. For the treatment of the mischiefs arising from the cold produced by snow, see COLD and FROST.

Snow-ball tree. See GUELDER ROSE.

SNOW-BUNTING, BUNTING, or *Emberiza*, a genus of birds, comprehending seventy-seven species, scattered over the four quarters of the globe; but chiefly found in Europe and America; six inhabitants of our own country. They are distinguished by a conic bill, mandibles receding from each other from the base downwards; the lower sides narrowed in, the upper with a hard knob. The following are the chief.

The *Nivalis*, Snow bunting, or Snow bird, has the quill feathers white, the primaries black on the outer edge; tail feathers black, the lateral ones white: three other varieties, from a trifling variation in the colours; but in all of them the colours vary with age, sex, or climate; most of them being nearly white in the winter, but the back and middle coverts black; they inhabit, during summer, in vast flocks, the north of Europe, Asia, and America; in winter migrate to a warmer climate; they appear in England before the setting in of frost and snow; build in holes of rocks, and lay five white eggs spotted with brown.

The *Hortulana*, or Ortolan, has the quill feathers brown, the first three whitish at the edges; tail feathers brown, the two lateral ones black on the outer side; three or four other varieties. Inhabits Europe; six and a quarter inches long; feeds chiefly on panic-grass; grows very fat, and then esteemed a delicacy; lays twice a year, four or five grey eggs in a low hedge, or on the ground.

The *Citrinella*, or Yellow hammer, has the bill black; tail feathers blackish; crown, cheeks, and body beneath yellow, above greenish black; inhabits Europe, six and a quarter inches long; builds sometimes on the ground; sometimes in low bushes; nest very deep; eggs whitish purple, with irregular blackish spots and streaks.

The *Miliaria*, or Common bunting, is brown spotted beneath with black; size of the yellow hammer; inhabits in flocks most parts of Europe during the autumn and winter; builds in the grass.

The *Oryzivora*, or Rice bunting, is black, crown reddish; tail feathers daggered; another variety olive brown, beneath yellowish. Inhabits Cuba, and migrates to Carolina as the rice crops advance, committing great ravages; whence its name; it afterwards proceeds to New York, to feed on the young Indian corn; sings well; six and three quarter inches long.

The *Schœniculus*, or Reed bunting, has the head black, body grey and black; two other varieties; one brown, cinereous beneath, the other white with dusky wings. Inhabits Europe and southern Siberia; the second variety the Cape; the third Astrachan; in marshy and sandy places; suspends its nest like a hammock; eggs five, bluish white, with irregular purplish veins; sings in the night; song much admired; five and three quarter inches long.

SNOW-DROP, or *Galanthus*, a genus consisting of one species only, the *nivalis*, growing wild in the orchards of our own country. This species, however, affords three varieties: the Common snow-drop,—the Half double,—and the Double. The first is the earliest flowering, then progressively the second and third. They are elegant ornaments to the borders of gardens, appearing sometimes as early as January. They will succeed in almost every soil and situation, and abundantly propagate themselves by offsets from the roots. It is said that the roots may be prepared in the same manner as the orchis for salep, and that they are also very nutricious.

SNOW-DROP-TREE, or *Chionanthus*, a genus consisting of five species, natives of the East Indies, West Indies, and America. The corol is four cleft, the divisions extremely long; drupe with a striate nut. The chief are, the *Virginiana*, a Carolina shrub, with white flowers and acute leaves; and the *compacta*, a Caribbean tree, fifteen feet high; the leaves lanceolate, oblong; panicles trichotomous, the last flowers subcapitate.

SNUFF, a well-known preparation, the basis of which is most commonly tobacco, reduced to powder, other matters being incorporated with it, the chief of which are, we believe, lime, yellow ochre, and sal ammoniac.

The taking of snuff may be occasionally beneficial, but the constant practice of taking it, deprives the snuff-sot of all its medicinal advantages. To protest against a practice at once both dirty and disgusting, is all we can do: for we fear little that we can say will have any weight with those who choose such vulgar stimulation.

Soal, or Sole. See FLAT FISH.

SOAP, or *Sapo*, a chemical compound, produced by the union of any of the fixed oils with alkalies, earths, or metallic oxides. The soaps thus produced are of very different kinds.

The combination of an oil with an alkali, uniformly produces a compound soluble in water, and in which the characteristic properties of oils and alkalies are destroyed or changed. Soap is either hard or soft; it is variously named, according to its colour and consistence: white, mottled, yellow, or soft soap, &c. All the kinds in common use are made, for the most part, with fat and oil, combined with either potash or soda; but principally with soda, unless a soft soap is wanted, as potash liquefies upon exposure to atmospheric air, whereas soda effloresces.

Neither potash nor soda can be advantageously employed in making soap till they are deprived of the carbonic acid and the earthy matters with which, as they are commonly obtained in commerce, they are combined. The process by which this is effectuated is as follows:

Into a vessel or cistern, about eight feet square and one foot deep, is introduced *quick lime*, in the proportion of one-fifth of the weight of oil intended to be converted into soap; water is slightly sprinkled over the lime when it then becomes hot and falls into powder; after which the soda or barilla, previously pounded, must be carefully mixed with it by means of a shovel. In order to favour the operation, a little water is occasionally added. As soon as the mixture is accomplished, it is transferred into tubs. In small establishments the vessels are made of white wood; but in those which are on a larger scale, they are composed of stone lined with bricks, and sunk into mortar made of puzzolana or similar earths. These cisterns are usually about five feet by four, and one and a half in depth. They are perforated at the lower part of the side next the work-house, with two holes which are closed by stop cocks, or pegs of wood. Under each of these vessels are reservoirs constructed with the same care, and intended for the reception and preservation of the leys. When the lime and soda are transferred to the tub or to the cisterns, a quantity of water is poured on the mixture, sufficient to cover it to the height of about a foot and a half. After leaving the water in this state for several hours, it is drawn off into one of the reservoirs. This is called the first ley. Water is again put upon the mixture, to remain the same time, and afterwards to be drawn off as before. This is termed the second ley. The operation is repeated as long as ley of any power comes from the mixture.

The ley is commonly used no stronger than to be able to sustain a new-laid egg. The oil or tallow is first boiled with a part of the ley, which may be diluted with water, till the whole forms a soapy compound. The stronger ley is then to be added and kept slowly boiling, while a person assists the union by agitation. When it is sufficiently boiled, a separation will appear to be taking place; the soap being at top and the watery fluid below; to effect this separation completely, a quantity of common salt is added. The materials are usually boiled three or four hours, when the fire is withdrawn. The soap now floats at the top of the liquor, and the ley beneath being of no further use is drawn off. It is then melted with another ley, and when a little boiled, is cast into wooden frames. When it is perfectly cold, the cakes are taken out and cut into convenient bars.

The tallow for making soap is reckoned very good, if 13 cwt. of it yield, with alkali, a ton weight of soap.

White soap is made with olive oil and soda. *Yellow* soap with tallow and yellow resin, in the proportion of ten parts of tallow and three and a half of resin; these, if good, will make, with the addition of the alkali, twenty of soap. Some of the fish oils are also, we believe, occasionally used in the manufacture of the inferior soaps.

Mottled soap obtains its speckled appearance either by dispersing the ley through the soap towards the end of the operation, or by adding sulphate of iron, oxide of manganese, or indigo.

Windsor soap is the common white soap, scented with oil of caraway seeds, or other scent. *Black* soap, or soft soap, is made from fish oil and a ley of potash, made in a similar manner as the ley of soda above.

A cheap soap is sometimes made by using woollen rags, &c., and even the horns of animals instead of oil: these substances being soluble in caustic ley, and by proper boiling form soap. But the smell is commonly very disagreeable.

Soap is easily and completely dissolved in water; but in hard water it curdles, or is only imperfectly dissolved. A solution of soap in spirit of wine is sometimes used as a test to discover whether the water of any spring be hard or soft. If soft the solution will unite with it; but if hard the soap will separate in flakes.

The uses of soap are so various, important, and well known, that it is unnecessary to notice them. The soap manufacturer is subject to severe regulation under the excise laws; he must also take out an annual license. The duty on hard soap for general consumption in this country is 3d per lb.

Soap balls for washing the hands are made of various colours, by simply cutting white soap into small pieces, rolling them in vermilion, blue, or other colour, and squeezing them together into balls. They may be of course scented with whatever we may wish; orris-root powder, &c. may also be added at pleasure.

Castile soap is sometimes made in this country, and is, we believe, nothing more than the common white soap made either with tallow and barilla, or olive oil and barilla, and after it is poured out into the moulds, a small quantity of a solution in water of sulphate of iron is mixed with it, to give it the marbled appearance which it always more or less possesses.

But the best Castile soap which is imported into this country is brought from Marseilles, although it is also brought from Spain. The foreign article is considered the best for medicinal use. Soap is generally regarded as purgative and lithontriptic. Its powers, however, in both these intentions, are very limited. It is a very useful vehicle for many active medicines in the shape of pills, as, by its means, they soon dissolve in the stomach. Castile soap is, we believe, also a useful tonic, chiefly by the quantity of iron which it contains. It may be also given to counteract the effects of metallic and other poisons; but in such cases it would be better to use the common white or yellow soap, than Castile soap. It should be given dissolved in water; a tea cupfull of which may be drunk at short intervals, till good effects are produced. The dose of soap internally, is from five grains to half a drachm, made into pills.

Soap is also employed externally in frictions to sprains and bruises; it has also been recommended to be rubbed in a strong lather on the swelled bellies of children labouring under mesenteric fever. Soap enters into several medicinal compositions. See CERATE, LINIMENT, and STEERS' OPODELDOC.

Soap is also a useful vehicle for administering many medicines in the shape of balls to horses.

SOAP-BERRY-TREE, or *Sapindus*, a genus consisting of ten species, of which the two following are chiefly cultivated. The *saponaria*, or Common soap-berry-tree, unarmed, with pinnate leaves, and lanceolate leaflets. It rises with a woody stalk, twenty or thirty feet high, with a branchy top; flowers small, white, succeeded by oval black berries, of the size of cherries, having a saponaceous skin, and inclosing a smooth roundish nut. These nuts were formerly imported for waistcoat buttons; they are very durable. A native of the West Indies. The *rigidus*, or Ash-leaved soap-berry-tree, has the stalk woody, rising twenty feet high; a native of the West Indies and America. Both these should be raised from seeds, procured from their native soil, and sown in small pots filled with rich earth, and plunged into a hot-bed; they must be well watered, and as they rise, gradually exposed to the air; but in the autumn removed to the greenhouse or bark-bed; in other respects they must be managed as other greenhouse plants.

SOAP-WORT, BRUISE-WORT, or *Saponaria*, a genus of plants comprehending nine species, of which only one, the *officinalis*, a native of our own hedges, is cultivated; it has elliptical lanceolate leaves, stem a foot and a half high; the root perennial; the corol flesh or rose-coloured, varying to white, and sweet-scented; it flowers from July to September. Two or three varieties; chiefly the double-flowered and the hollow-leaved. These are all readily increased by parting the roots, and planting the partings, either in autumn or spring. The double sort affords variety in borders; the hollow-leaved is employed in ornamenting rock-work.

The roots yield by decoction a saponaceous liquid which, as well as the leaves, have been used by some persons as substitutes for soap. It has been occasionally used in medicine; but we are not warranted in recommending it to the attention of our readers.

SOCIETY, a voluntary association framed by a number of individuals for promoting their general benefit. See GOVERNMENT.

Society also implies an association of individuals for the promotion of some particular branch or branches of knowledge, science, &c. Societies of this kind are numerous in Europe; and in our own country, many societies, during the last century, have been honourably and laudably distinguished as contributing to the general mass of information, relative to the sciences, the arts, &c. Amongst these the *Royal Society*, The *Society for the encouragement of Arts, Manufactures and Commerce*; the *Society for bettering the condition of the Poor, &c. &c.*, have, unquestionably, effected much improvement in our moral and social well-being. It is to be lamented, however, that most of such societies are established on principles which contribute to their degeneracy. Many of the societies in this country, of an old date, appear to us to be sinking, or to have sunk down into bodies, possessing the spirit of a close corporation, than which nothing can be more injurious to the developement and expansion of the human intellects, or to the progress of useful and necessary knowledge. See ROYAL SOCIETY.

Society, Benefit. See BENEFIT SOCIETY.

SODA, an alkali which exists in abundance in various natural bodies. It is most usually, however, and most readily obtained from the ashes of many species of the *salsola*, or salt wort. See KALI and BARILLA; which last is an impure sub-carbonate of soda.

Till the discoveries of Sir HUMPHRY DAVY, soda was supposed to be a simple body, but the masterly skill displayed in the use of the galvanic battery, has demonstrated that soda consists of a base, or metal, to which the name *sodium* has been given, and oxygen. Sodium is obtained from soda by an operation analogous to that of procuring potassium from potassa. It is soft, malleable, and easily sectile. Its specific gravity is 0.9. In colour it resembles lead; it fuses at 180°, and is volatile at a white heat: it burns when heated in contact with air, and requires the same cautions to preserve it as potassium. When it is thrown upon water it produces violent action, but the metal does not, in general, inflame; hydrogen is evolved, and a solution of soda is procured.

Soda, as it usually occurs in the laboratories, is obtained from the subcarbonate by the action of lime, as described under potash. When it is exposed to the air it soon becomes covered with an efflorescence of subcarbonate of soda. Its colour is greyish white, and it requires a red heat for fusion. It is distinguished from pure potash by forming an efflorescent paste when exposed to the atmosphere; whereas potash, under the same circumstances, deliquesces. It is powerfully caustic.

Soda combines with the acids, and forms a variety of important bodies. With chlorine it forms common salt, or muriate of soda. With the sulphuric acid it forms sulphate of soda, or Glauber's salt, &c. &c. Soda is also used extensively in the arts. With oils, tallow, &c., it forms soap. See SALT, SOAP &c. &c.

Many of the combinations of soda are used medicinally; the following are the chief:

Subcarbonate of soda. Take of impure soda, (*barilla*,) in powder, one pound; boiling distilled water four pints. Boil the soda in the water for half an hour, and filter the solution. Evaporate it to two pints, and set it apart, that crystals may form. Throw away the liquor that remains. These are the directions according to the London College; but a pure sub-carbonate of soda is now manufactured on a great scale by the decomposition of sulphate of soda, and of muriate of soda, which will most probably supersede the processes of the pharmacopœias.

Subcarbonate of soda has a mild alcalescent taste, and changes the vegetable blue and red colours to green. Its crystals are large transparent octoëdrons, which effloresce when exposed to a dry air, and crumble down into a white powder. It is soluble in two parts of water, at 60°. It is antacid and deobstruent, and less acrid than subcarbonate of potash, and hence is in more general use in dyspepsia and acidities of the stomach, and in scrofulous affections. It has latterly been recommended in hooping-cough: it should, in this complaint, be first given, after the stomach and bowels have been duly evacuated, in combination with ipecacuanha and opium; and afterwards, when the cough has abated, with myrrh and Peruvian bark. The dose is from ten grains to one drachm, twice or thrice a day.

The sub-carbonate of soda may be reduced to a powder by heating it in a clean iron vessel, until it becomes perfectly dry. In this state it may be given in pills; and has been found useful in calculous complaints, and other urinary affections. The dose is from ten grains to fifteen, three times a day. It may be made into pills with soap.

Water of super-carbonate of soda, commonly called *soda water.* Take of water ten pounds; sub-carbonate of soda two ounces; dissolve, and subject the solution to a stream of carbonic acid gas, obtained from three ounces of carbonate of lime, and the same quantity of sulphuric acid, with three pounds of water, gradually and cautiously mixed together. It may be conveniently prepared in Nooth's apparatus. But if a larger quantity of it be required, an apparatus capable of affording a greater pressure will be requisite. It must be preserved in well-corked bottles. This preparation is milder and pleasanter than the water prepared with subcarbonate of potash. It is manufactured in London on a great scale, and of a much superior quality to any which a private individual can prepare; and is in very general use as a cooling beverage. Half a pint of it poured over two table-spoonfuls of lemon-juice, sweetened with a little sugar, forms an agreeable effervescing draught; and the same quantity poured upon two ounces of boiling milk, forms an excellent substitute for asses' milk.

Tartarized soda, tartrate of potassa and soda, or *Rochelle salt,* is a cooling and not very unpalatable cathartic. It operates moderately, and is well suited to nephritic and puerperal cases. The dose is from one ounce to one ounce and a half, dissolved in any convenient vehicle.

For *Sub-borate of Soda* see BORAX.

For *Muriate of Soda* see SALT.

For *Phosphate of Soda* see PHOSPHATE OF SODA.

For *Sulphate of Soda* see GLAUBER'S SALT.

Soda Water. See above.

SODALITE, or NATROLITE, a mineral hitherto only found in Greenland. Its colour is light green, and it occurs massive and crystallized in rhomboidal dodecaëdra. It consists chiefly of silica, alumina, and soda, with small portions of lime, muriatic acid, and oxide of iron. Specific gravity 2,378.

It contains 23,50 of soda, in 100 parts; no mineral has hitherto been found containing so much soda as this, hence its name.

Sodium. See SODA.

SOIL, the surface or outward coating of land, consisting of various earthy matters, with a mixture of animal and vegetable substances in a state of partial decomposition, together with certain saline and mineral ingredients. When these ingredients are favourably combined, it is admirably calculated to afford support to plants, to enable them to fix their roots, and to derive nourishment from the soluble and dissolved substances contained in it, or passing into it. The stratum on which the soil is incumbent, is called the subsoil.

We have anticipated what we have to say relative to soils, in our article HUSBANDRY, to which, as well as to MANURES, the reader will, therefore, be pleased to refer. For the mode of analysing soils see DAVY'S *Elements of Agricultural Chemistry.*

SOILING, in husbandry, the feeding of stock in a house, shed, or fold, with cut green food.

Various articles are used for this purpose, as tares and lucern; also barley, oats, and beans, all in a green state; but red clover, either alone or mixed with rye-grass, is the substance most commonly employed.

The advantages of soiling are various. It is a great saving of land, as one acre of cut clover is equal to two pastured. It is a great saving of food: for when pastured, much of the crop is destroyed in various ways. It is likewise safer for stock; as when they are soiled they are not so liable to accidents as under the pasturing system. Soiling is also the means of obtaining a greater quantity of rich dung than can otherwise be obtained. The succeeding crop after cut-clover is also uniformly better than when it is pastured; and the fences are not so liable to injury from the stock.

Soiling, for working horses, is exceedingly beneficial, by enabling them soon to eat their fill without the trouble of seeking for food; by which they are enabled to rest considerably more than they otherwise can do. The experiments of soiling cattle have likewise been successful. Young steers become more tractable for work; for milch cows soiling answers admirably. Pigs may be soiled on clover with much advantage; and for this purpose there should be a patch of clover in the garden of every cottager. Green beans are a still more profitable article for pigs. The Windsor sort are the best; and they should be planted at different times, to have a regular succession of them. Horses and cattle are also fond of them.

There is certainly no mode by which cultivated grasses will answer so well as by soiling.

SOLDER, a metallic cement used chiefly by plumbers; it is also used by tin-men, goldsmiths, &c. It is a general rule with respect to solder, that it should always be easier of fusion than the metal which is intended to be soldered by it; next to this, care must be taken that the solder be, as far as possible, of the same colour as the metal intended to be soldered. The *soft solder* of plumbers is composed of tin and lead, in equal parts, fused together; after which it is run into moulds in shape not unlike a gridiron. For common purposes a mixture of pewter and lead is generally used.

Solder is also made of gold, silver, copper, and bismuth, for the various finer processes in the arts. Silver solder is generally composed of seven parts silver, and one of brass, or copper. Gold solder consists of gold, and a small portion of copper. Gold is also an excellent solder for the finer kinds of iron and steel instruments.

Sole. See FLAT FISH.

SOLITUDE, the state of being alone. Notwithstanding occasional retirement from the world and from society is exceedingly useful both to our mental and corporeal health, yet, a complete seclusion from mankind, and a withdrawing from the performance of useful, important, and necessary duties, from the selfish desire of avoiding trouble, and escaping from pain, is neither commendable nor just. And, however the grand and remote scenes of savage nature may delight and astonish for a season, they are not fit for the continual residence of man. The most ambitious, the most naturally independent must, at times, descend from the lofty, but solitary and barren tracks of his greatness, to solace himself with the lowlier, but kindlier charities of life. Deserts and solitudes may be endured for a time, but, sooner or later, we shall feel the want of, and languish for the intercourse of, our fellow creatures, for the sweet interchange of human affection, for the comforts and elegancies of polished life, and return to them with enhanced eagerness and zest. And although,

"To fly from need not be to hate mankind
yet—
"The sphere for action is the sphere for man.

SOLOMON'S SEAL, *the* SWEET SMELLING, *or Convallaria polygonatum*, a native perennial plant, growing in mountainous woods, and the fissures of rocks, chiefly in Yorkshire; flowering in May and June. The roots have been, in time of scarcity, converted into bread; and the plant was formerly in the materia medica, but is in no respect of any importance. Another species, called *convallaria multiflora*, or Common Solomon's seal, may also be mentioned.

SOLUTION, in chemistry, an intimate commixture of a solid body with a fluid.

The following salts, dissolved in eight ounces of distilled water, in the proportions set down.

	oz	dr.
Refined sugar	24 ..	0
Sulphate of Iron	9 ..	4
——— Copper	9 ..	0
——— Zinc	4 ..	4
——— Magnesia	4 ..	0
Nitrate of Potash	4 ..	0
Tartrate of Potash........	4 ..	0
Muriate of Soda..........	3 ..	4
Sulphate of Soda	3 .	4
Alum	2 ..	4
Muriate of Ammonia......	2 ..	4
Sulphate of Potash	1 ..	4
Carbonate of Ammonia ..	1 ..	4
Acetate of Lead	1 ..	2
Supertartrate of potash....	1 ..	0

Though water takes up only a certain quantity of one kind of salt, yet, when saturated with one, it will still dissolve some portion of another.

SOMNAMBULISM, a disease distinguished by the patient's walking in his sleep, and performing many actions as if he were awake.

It may arise from the same causes as the Incubus, and indeed generally does so : but it may also arise from some powerful affection of the mind.

In the cure of this complaint reference to the cause is absolutely necessary. If it originate from improper food, heavy suppers, the use of fermented liquors, &c. such causes must be of course avoided, and a light, and somewhat spare, though not debilitating diet, should be adopted. If from affections of the mind, whether grief or any other mental malady, our attention must be directed to the removal of these, before we can expect a cure. In all cases of somnambulism, attention to the stomach and bowels is essentially necessary ; the bowels in particular should be kept somewhat relaxed ; and all flatulent food and drink, must be at all times of the day most carefully interdicted.

SOOT, a volatile black matter arising from wood and other fuel along with the smoke ; or rather it is the smoke itself condensed and gathered to the sides of the chimney. Soot distilled by a strong fire, yields ammonia and an empyreumatic oil, a considerable quantity of fixed matter remaining at the bottom of the distilling vessel. If burnt in an open fire, it flames, with a very thick smoke, whence other soot is produced. It is used as a material for making sal ammoniac, and also as a manure.

SOOTHSAYER, or *Mantis*, a genus of hemipterous insects consisting of sixty-four species, scattered over the globe, all exotics to this country : two or three of them worshipped by the Hottentots. The most remarkable is the *gongylodes* of China. The insects of this genus possess a form the most romantic and extraordinary that is, perhaps, presented by any animated being. From the singular manner in which they sit upon the four hind legs, having the two fore ones raised up and folded together, the credulous multitude have supposed that they were holding intercourse with the Supreme Power in the exercise of devotion ; even in the south of France this superstition has predominated. This opinion of their sanctity has procured for these animals a protection to which they do not seem by any means entitled.

SOPHORA, a genus of plants comprehending twenty-five species, scattered over America, the islands of India, and Polynesia. The following are cultivated : The *alopecuriodes*, or Fox-tail, the *australis*, or Blue, the *tinctoria*, or Dyers, the *alba*, or White, the *tomentosa*, or Downy, the *occidentalis*, or Occidental, the *japonica*, or Shining-leaved, the *capensis*, or Vetch-leaved, the *aurea*, or Golden-flowered, the *myrtilifolia* or Round-leaved, and the *heptaphylla*, or Seven-leaved sophora. The last was formerly in the dispensatories, but now unheard of as a medicine. The first five may be increased either by seeds or parting the roots, and are hardy plants ; the rest are raised by seeds alone, and must be treated as green-house plants.

Sorb-tree. See PEAR.

SORE-THROAT, or *Cynanche*, a complaint of which there are several varieties, such as, the *cynanche tonsillaris*, Quinsy, or Inflammatory sore-throat. The *cynanche maligna*, Malignant, putrid or ulcerous sore throat. The *cynanche trachealis*, or Croup. See CROUP and INFANCY ; and the *cynanche parotidæa*, or Mumps. See MUMPS.

The *quinsy*, or *inflammatory* sore-throat, is distinguished chiefly by swelling and inflammation of the tonsils, spreading along the velum, and the uvula ; it is attended with pain and difficulty of swallowing ; a troublesome clamminess of the mouth and throat ; a frequent but difficult excretion of mucus ; and there is also, most commonly, more or less fever.

It is sometimes produced by cold externally applied, particularly about the neck ; but is, we believe, more frequently produced by the same cause as catarrh, see CATARRH. It affects chiefly the young and sanguine; and a disposition to it is often acquired by habit; it occurs especially in spring and autumn, or at any other time when the changes of temperature are great. It either goes off without or with suppuration; and is rarely attended with any danger.

As this is strictly an inflammatory complaint, at least in its first stages, a thin and spare diet, such as barley-water, gruel, panada, &c. should be immediately adopted. The bowels may be opened with a saline purge, such as Glauber's, or Epsom salts; and all animal food should be carefully avoided. If the fever is great a few ounces of blood may be taken from the arm, but this is in general by no means necessary. Gargles have been recommended and sometimes are useful, but we do not advise reliance upon them. The following gargle is, perhaps, one of the best. Take of muriatic acid thirty drops; honey of roses two fluidounces; of barley-water six fluidounces. Mix them. A thick piece of flannel, moistened with the following liniment, may be applied externally to the throat. Take of camphor two drachms; of olive oil one ounce; of solution of ammonia three ounces. Dissolve the camphor in the oil, and then add the solution of ammonia.

If, however, this disease should put on alarming symptoms, a physician should be consulted,

The *putrid sore throat* is generally believed to be contagious, and has been observed to prevail equally in every situation and at every season; and on exposure to the contagion, no age, sex, or condition, is exempt from it. But once having had the disease is said to be a defence against its future attacks. It is a dangerous and sometimes fatal disorder, and appears to be a species of typhus accompanied with the peculiar affection of the thoat. What, therefore, is said under TYPHUS and CONTAGION, is deserving of serious attention in this complaint. See those articles.

It is distinguished from the inflammatory sore-throat, by a great depression of spirits, sickness, and sometimes vomiting; the pulse is quick, small, and fluttering, though sometimes heavy and undulating; the fever is also great; the throat much swelled, sometimes threatening strangulation, and the parts slough off leaving ulcers more or less deep; delirium and coma are often attendants on this disease, which is generally at its height about the fifth or sixth day in young persons; in older not so soon; the crisis sometimes not being till the eleventh or twelfth day.

As no person should attempt to be his own physician in this complaint, the advise of an experienced one should at once be obtained.

We may add, however, that reliance should not be placed upon gargles and local applications alone; the disorder affects the whole system, and must be cured by medicines affecting it generally, rather than locally. Opiates and ammonia will frequently be of service. The former, where the irritability is great; and the latter, when considerable torpor and coma is present, to rouse the dormant energies.

Sorrel. See DOCK.

Sorrel, the wood. See WOOD-SORREL.

Sorrow. See AFFLICTION, ANXIETY and GRIEF.

Soul. See MIND.

SOUND, the vibrations of sonorous bodies communicated to the air, and which, by the impressions thus made on the ear, excite the sensation which we call sound.

The usual medium of sound is the air: for in a receiver exhausted of air a bell can scarcely be heard at all. When the air is condensed the sound is louder in proportion to the condensation or quantity of air crowded in. And although it has been said that the velocity of sound is the same, whether it goes with the wind, or against it, we have had frequent opportunities of knowing, by the most indubitable evidence, that of our senses, that, the sound of bells for instance, is not conveyed so far *against* a current of wind, as *with* it. We do not know the exact difference, but, probably, it is as one to two: that is, sound with the wind, is carried double the distance which it is carried when conveyed against it, so as in both cases, to become audible by the human ear.

Sound, it is now generally assumed, passes through 1142 feet of air in a second of time, or 13 miles in a minute. Distances may, therefore, be calculated by sound, with some approach to accuracy. If a person's pulsations of the artery at the wrist, be 75 in a minute, of course, sound passes 13 miles during these number of pulsations, or a league in 20 pulsations, and hence the distance of objects may be found, by knowing the time the sound takes in moving from those objects to an observer. Thus, for example, on seeing the flash of a gun at sea, if 54 beats of the pulse at the wrist were counted before the report was heard, the distance of the gun is easily found by dividing 54 by 20, which gives 2,7 leagues, or about 8 miles.

SOUND, an instrument used by surgeons, and introduced through the urethra, to discover whether there be a stone in the bladder.

SOUNDNESS, in farriery, a term applied to horses which are not labouring under any defect or disease. It is, however, so indefinite, that constant disputes exist between the buyers and sellers of horses, on account of the different meanings of the term; and the lawyers do not appear to have contributed to settle the matter. An inexperienced purchaser of a horse, should always procure the assistance of a professional person; and if such cannot be had, he should have a receipt from the person of whom he purchases it, in the following form:

Received the day of——18—, of Mr. ——, the sum of———, for a (bay) gelding, (or mare, or horse) warranted sound, free from vice, or restiveness of every kind, both in and out of the stable; not a crib-biter, and between five and six years old.

But we are not sure that even this precaution will always secure the purchaser from trouble.

SOUP, a strong decoction of beef, veal, or other animal substances; and which is generally seasoned with aromatic vegetables, pepper, &c.

Soups, as they are commonly served up at the tables of the opulent, are, perhaps, the most injurious dishes which ever enter the human stomach. Not content with a strange mixture of various ingredients, the cook too often adds flour to them, in order to give them greater consistency, than which nothing can be more mischievous. See Beef-tea, and Broth. To soup, however, when prepared from animal food alone, without the addition of any condiment, salt excepted, there can be no objection, when eaten occasionally, as a variety of aliment; but that a dish of soup should always precede more solid aliment at dinner, and that the appetite should be thus tempted by various dishes, is repugnant to every idea of health, and most injurious to the stomach, and the process of digestion.

Portable soup is a kind of cake, formed by dissolving the gelatinous parts of animal substances, by boiling in water, straining them, and afterwards evaporating the whole of the water. The following is said to be the best mode of preparing this useful substance: Take four calves feet; a leg of beef, 12lbs. Boil them in a sufficient quantity of water, and let the skum be taken off; after which let the soup be separated from the meat, by straining and pressing. The meat is then to be boiled a second time in other water; the two decoctions being added together, must be left to cool, in order that the fat may be exactly separated. The soup must then be clarified with five or six whites of eggs: a sufficient quantity of common salt should also be added. The liquor is then strained through flannel, and evaporated in a water-bath, to the consistence of a thick paste, after which it is spread upon a smooth stone, then cut into cakes; and lastly, dried in a stove, until it becomes brittle; these cakes are kept in well-closed jars or bottles. They will keep many years. When intended to be used, the quantity of half an ounce is put into a large glass of boiling water, which is to be covered and set upon hot ashes, for a quarter of an hour, or until the whole is dissolved. It will form an excellent soup, and requires no addition but salt. It is peculiarly well adapted for sea voyages.

Sour Croute. See CROUT.

Sour Gourd. See GOURD, SOUR.

Southernwood. See MUGWORT.

SOVEREIGN, a gold coin lately issued in this country, value twenty shillings.

The weight of this coin, when issued from the mint, is five pennyweights three grains. But it is legally current if it weigh only five pennyweights and two and three-quarter grains. The weight of a half sovereign is, of course, the half of these weights respectively. See GOLD.

SOW, the female of swine. See SWINE.

SOW-BREAD, or *Cyclamen*, a genus comprehending four species, three of them natives of the South of Europe and Asia: and one, the *Europæum*, with angular-toothed leaves, indigenous to the shady woods of our own country. They are all low herbaceous perennials, with tuberous roots; and when cultivated with highly ornamental and variegated flowers, frequently accompanied with an exquisite fragrance. The species are best propagated by seeds; the varieties by dividing the roots. They are easily cultivated with a little care, to preserve the young plants from severe frosts.

SOW-THISTLE, HARE'S LETTUCE, or *Sonchus*, a genus of plants, consisting of thirty-four species, chiefly natives of warm climates; the two following common to our own country: the *oleraceus*, or Common sow-thistle, found in our wastes; and the *cærulius*, or Blue-flowered sow-thistle, found in our high pastures; and both weeds injurious to other vegetables.

SOY, or SOOJOU, a species of liquid condiment, imported from India. It is prepared from the leguminous fruit of the *dolichos soja.* See COW ITCH. It is an addition to our aliment, which does not seem to have any good qualities to recommend it.

Spa-water. See MINERAL WATERS.

SPADE, a well known implement of different shapes, used in gardening and husbandry.

Spain, Pellitory of. See PELLITORY.

SPAN, the space from the end of the thumb to the end of the little finger extended: nine inches.

SPANIEL, a variety of the *familiaris*, or House dog. Spaniels are of four kinds: two are the larger and smaller water spaniels, the other two are land spaniels. All these are frequently used by sportsmen, from their sagacity and exquisite powers of scent.

Spanish broom. See BROOM.

Spanish brown. See COLOUR-MAKING and REDDLE.

Spanish fly. See FLY, THE SPANISH.

Spanish liquorice. See LIQUORICE.

SPAR, or *Spatum*, a genus of earths, consisting of carbonate of lime, a larger portion of carbonic acid gas and water; it is lamellous, shining, soft, lightish, breaking into rhomboidal fragments; crackling in the fire. Twenty-three species have been enumerated, the chief of which are *common spar*, a Calcareous spar, found in various parts of Europe; *specular spar*, Pellucid spar, a rhomboidal spar, found also in various parts of Europe. Several species are either *cellular, cylindrical*, or *globular*. Some are also in a *shrub-like*, or *coral form*: these are found in Bohemia and Hungary; the coral form also at St. Mawes, in Cornwall, and North Wales. Many of the species are crystallized, and these are found chiefly in lime-stone rocks in most parts of Europe. *Truncated nitre*, or Crystalline spar, with perfect six-sided prisms, is found in Derbyshire and various parts of Europe, in mines. *Sparry tufa*, is found in the mines of Derbyshire, and other parts of Europe. *Dog's tooth* spar, or Irregular nitre, is found in the mines of Derbyshire and Cumberland, and other parts of Europe.

Spar, the ponderous. See BARYTES.

SPARROW, a name applied to several birds of different genera. For *Sparrow hawk*, see **Falcon**; for *Hedge sparrow*, see **Warbler**; for *House sparrow*, see **Finch**; for *King sparrow*, see **Finch**.

SPASM, a term often employed in medicine, and implying the same as convulsion. It consists in an involuntary contraction of the muscular fibres. When the contractions alternate with relaxations, which are frequently and preternaturally repeated, they are called convulsions. Spasms have been divided into *clonic* spasms, which are the true convulsions, as in epiplepsy; and *tonic* spasms, in which the member remains rigid, as in locked jaw. See **Convulsions**, **Epilepsy**, **Hysteria**, **Tetanus**, &c.

SPAVIN, a disease of the horse's hock, generally causing lameness. Spavins are of two kinds, the bone, and the bog, or blood spavin. The former consists of a bony enlargement of the inside of the hock joint, towards the lower part; the latter of a soft but elastic tumour, a little higher, and more on the inside, or towards the bend of the joint.

The most effectual remedy for bone spavin is firing; and if it be done at an early period of the disease, it often cures it. In obstinate cases the bony swelling is sometimes punctured in several places, and some blistering ointment mixed with a small quantity of corrosive sublimate rubbed in: this leaves a permanent blemish, but sometimes effects a cure.

Bog, or blood spavin, does not often cause lameness. It is seldom cured. Repeated blistering is, perhaps, most likely to be beneficial.

Horses that are cat-hammed, or have their hocks inclining inward, are most disposed to spavin; this tendency is promoted by making the outer higher than the inner heel of the shoe, a practice too common. Working a horse at too early an age is, also, another cause of spavin.

Spawn. See **Milt** and **Roe**.

Spear, King's. See **Daffodil** and **Narcissus**

Spearmint. See **Mint**.

Spear wort. See **Crow-foot.**

SPECIES, in natural history, a distinct form of animals or vegetables, producing, by certain laws of generation, others like themselves, agreeing also in certain outlines, with the genus under which it is arranged, but differing in various minute particulars. See **Genus**.

SPECIFIC, in medicine, a drug or composition which is supposed to be peculiarly adapted to, or is infallibly efficacious in, the cure of certain disorders. The number of actual specifics, in the healing art, is, indeed, very small. The ignorant and uninformed have, in all ages, been engaged in the fruitless search for specific medicines, and the crafty and designing have not failed to take advantage of unsuspecting credulity. See **Drug**, **Quackery**, and **Quack Medicines**.

SPECIFIC GRAVITY, the relative, comparative, or apparent gravity of any body in respect of that of an equal bulk or magnitude of another body, denoting that gravity or weight which is peculiar to each species, or kind of body, and by which it is distinguished from all other kinds. For the specific gravity of the metals, see the respective articles.

SPECTACLES, an optical machine, or contrivance, consisting of two lenses, generally made of glass and set in a frame, and placed before the eyes to assist in defects of the organ of sight. Old persons, and all presbyopes, use spectacles with convex lenses, to make amends for the flatness of the eye which does not make the rays converge enough to have them meet in the retina.

Short-sighted persons, or myopes, use concave lenses to keep the rays from converging so fast, on account of the great roundness of the eye, which is such as to make them meet before they reach the retina.

Those who stand in need of spectacles, ought at first always to choose such as represent objects without enlarging or diminishing them; and which, on being placed near the eye, exhibit printed characters clearly and distinctly without straining the organs. It will, therefore, in every instance, be advisable to consult the artist of whom the glasses are about to be purchased; for although every person must eventually determine what lenses afford him the most accurate vision, the artist will thus be much sooner enabled to find those which are suitable for the sight.

Short-sighted persons ought always to make a very gradual change in their spectacles, by selecting others which magnify a little more than the preceding pair, though somewhat less distinctly without obscuring the object. Thus their sight will be imperceptibly improved; and after making use of concave lenses, the defect of vision may be in process of time, entirely remedied. And as it would be difficult to meet, either with a pair of glasses in the shops that exactly fit both eyes, or with a person whose organs of sight are both of a size and construction perfectly equal, it rationally follows that such an important choice should be separately made with respect to each of these useful organs.

Spectacles are generally transparent and colourless; although sometimes green lenses are preferred by those whose eyes are unable to support a vivid light. Such colour is supposed to be most soothing to the human eye, though it tends at first, in some degree, to darken the object. Hence this shade will prove beneficial only to those who have strong but irritable eyes; nor should such persons use it, if light-coloured objects assume a reddish tinge after having tried the experiment for a few days. In all cases, however, spectacles ought to be employed only in writing, reading, or other occupations which render this artificial aid necessary. See EYE and SIGHT.

Speculum. See TELESCOPE.

SPEECH. We have anticipated what we have to observe relative to this subject, under our articles LANGUAGE and MIND, to which, as well as to READING, the reader will be pleased to refer.

SPEEDWELL, or *Veronica*, a genus of plants comprehending fifty-seven species, scattered over Europe, a few over New Zealand; seventeen found wild in the woods, pastures, marshes, ditches, or on the mountains of our own country. They are sub-divided into, Flowers spiked,—Flowers in a racemed corymb,—Peduncles with a single flower. The following are cultivated: the *Siberica*, or Siberian,—the *Virginica*, or Virginia,—the *spuria*, or Bastard,—the *maritima*, or Sea,—the *hybrida*, or Welsh,—the *longifolia*, or Long-leaved,—the *incisa*, or Cut-leaved,—the *decussata*, or Cross-leaved,—and the *officinalis*, or Officinal speedwell. This last is also called Common speedwell, Male speedwell, and Fluellin. There are also two other species, the *becabunga*, or Brook-lime, and the *chamædrys*, or Wild Germander, which were formerly in the materia medica.

The *Officinalis* has been considered useful in coughs and asthmatic complaints, an infusion of the leaves being drunk as tea. Brook-lime has also been supposed antiscorbutic; but none of the species of this speedwell are now esteemed.

For another genus, called sometimes speedwell, see GERMANDER.

Spelter. See ZINC.

SPERMACETI, or *Cetaceum*, is a substance obtained from the cachalot, or spermaceti whale. See the next article. It is found in the shops as a white, crystallized, friable, semi-transparent, unctuous substance, nearly inodorous, and insipid. Its specific gravity is ,9433. It melts at 112° of Fahrenheit, and at much higher temperatures evaporates very little altered. Long exposure to hot air renders it rancid; but it may be again purified by being washed in a warm ley of potash. It appears to be, in its general properties, nearly allied to tallow and the fixed oils. It is of course demulcent and emollient, and is occasionally given in dysentery and irritations of the alimentary canal; but we can scarcely think it so good as olive oil, or even common mutton suet. It serves to give consistency to ointments. The dose, when given internally, is from half a drachm to one drachm and a half, rubbed with sugar, and in the form of emulsion. When combined with water, by means of the yolk of an egg, it is a pleasant vehicle for tincture of opium, when the after-pains of parturient females are troublesome.

As an article of commerce, and for making candles, spermaceti is of considerable importance. It is brought to this country by ships called South sea whalers, which traverse the southern latitudes of the Atlantic ocean, for the purpose of taking the spermaceti whale. When imported it is a spongy, oily, dirty yellowish, unctuous mass, and is obtained chiefly from the cavity of the head of the animal; and is also separated from the oil by filtering from bags prepared for the purpose. It is purified in the great way thus: The mass is put into hair bags, and pressed between plates of iron, repeatedly, till it becomes hard and brittle, and till no more oil can be obtained from it. It is then broken in pieces, and melted with a considerable quantity of water; after boiling for a short time the impurities rise to the surface, and are skimmed off; a few of the more ponderous sink in the water. After being cooled and separated from the water, it is put into fresh water, in a large boiler, to which a weak ley is added made from the alkali, known in commerce by the name of *potash*, which is somewhat caustic; pearl-ashes are not proper. It is boiled in this ley for two or three hours, adding occasionally more of the alkaline solution. The fire is then withdrawn, the spermaceti taken off, and the water and impurities are thrown away. This process generally requires to be repeated three times, when the spermaceti will become perfectly colourless, and transparent as water, and must of course be put in proper vessels to cool; the kind generally used are made of stone-ware, about 18 inches in diameter, and six inches deep. When the cakes are completely cold, they are cut into pieces, when the spermaceti assumes the appearance of flakes, as it is met with in the shops. This account was published by the author of this book, in the Monthly Magazine for August, 1809, where those who desire further particulars may obtain them.

SPERMACETI WHALE, CACHALOT, or *Physeter*, a genus of mammalian fishes, having teeth in the lower jaw, none in the upper. There are four species, as follow:

The *Macrocephalus*, or Blunt-headed cachalot, without dorsal fin; fistula on the neck: three varieties: one black, back gibbous; another blackish ash, back gibbous; the third whitish, back smooth. They are said to inhabit the European seas, the coast of New England, and Davis's Straits. But we believe naturalists have been misled by commercial men in the history of these animals. They are caught, most commonly, in the southern latitudes of the Atlantic ocean; and, unless we have been misinformed, farther south than the tropic of Capricorn.

The first variety is sixty feet long, and has forty-six teeth in the lower jaw, received in sockets in the upper; teats retractile. The second variety is from sixty to seventy feet long; head large, eyes small, teeth numerous. The third fifteen or sixteen feet long: colour yellowish white.

The formidable conformation of the mouth and throat of these animals, indicates an extraordinary degree of voracity; and dissection confirms it; there being found in it fishes eight or nine feet long. The spermaceti, it appears, by the most recent account, is obtained chiefly from the head of the whale, and is said to be its brain. Ambergris is also produced by, or obtained from, this animal. Some persons say that it is found in the place where the seminal vessels of other animals are situated; and, therefore, that ambergris is the true spermaceti; others that it is found in a bag among the intestines. See AMBERGRIS.

The *Catodon*, Lesser cachalot, or Round-headed cachalot, is twenty-four feet long, without dorsal fin; a fistula on the snout; inhabits the Northern seas; rarely the Scottish coast.

The *Microps*, or Sharp-nosed cachalot, has the dorsal fin long, upper jaw longer than the lower; two varieties: teeth sharp, hooked:—teeth sharp, straight. Inhabits the Northern seas. The first is dark tawny, seventy feet long; the second is blackish above, beneath whitish; a high bunch on the upper part of the back; teeth set in the jaw like a saw; from eighty to a hundred feet long; found at times on our own coasts.

The *Turris*, or High-finned cachalot, has the dorsal fin very long, sharp, and erect, resembling the mast of a vessel; inhabits the Northern ocean, and has been found on the Scottish coast; a hundred feet long.

SPHACELUS, a mortification of any part. See GANGRENE and MORTIFICATION.

SPHINCTER, in anatomy, the name of several muscles, whose office is to close or shut the aperture around which they are placed, such as the *sphincter ani*, the *sphincter vesicæ*, &c. See ABDOMEN, BLADDER, and RECTUM.

Spice. See ALLSPICE, BAY, CLOVES, GINGER, &c. &c.

SPIDER, or *Aranea*, a genus of apterous insects, consisting of one hundred and twenty-three species, distinguished by a short mouth, horny jaws, the lip rounded at the tip; feelers two, in-curved, jointed, and very sharp at the end; those of the male clavate: antennaless; eyes eight; rarely six; legs eight; abdomen ovate, villous, and furnished at the tip with textorial papillæ. They are chiefly inhabitants of Europe and America, and are sub-arranged into fifteen sections, according to the position or the number of the eyes.

In every stage of their existence these insects prey with the most savage ferocity upon all other insects which they can overcome, and even upon one another. From the papillæ at the end of the abdomen they throw out at pleasure a number of fine threads, which they unite in various ways for the purpose of entangling their prey. They exfoliate their old skin every year, which is performed by suspending themselves in some solitary corner, and creeping out of it. They are infected by the sphex and ichneumon.

The largest European spider is the *diadema*; it is reddish brown, the abdomen gibbous, and marked with white drop-shaped spots, in the form of a cross. It is often met with in trees in our own country, and is a very beautiful insect. The *aquatica*, is a curious insect, found in the fresh-water lakes of Europe, and diving to the bottom in search of its food. The *aviculare* inhabits South America among trees, where it preys upon larger insects, and even small birds, dropping into their nests, and sucking their blood and eggs. It is of so enormous a size that its fangs are equal to the talons of a hawk, and its eyes capable of being set in the manner of lenses, and used as microscopes.

Spiders have been considered in this country as natural barometers. Thus it is said that, if the weather be about to become wet or windy, the spider makes the terminating filaments which support the web uncommonly short; and that when such threads are made very long, the weather will remain serene for ten or twelve days, or more. When the spiders are totally inactive, rain, it is said, will certainly follow; but if they continue to spin during a shower it is a certain indication that the rain will speedily cease, and be succeeded by fine weather.

SPIDER, the LONG-LEGGED, or *Phalangium opilio*, a species of the genus PHALANGIUM, of which nineteen species have been enumerated. They are without wings, and distinguished by a mouth with horny mandibles; feelers filiform; eyes four, legs eight. They are sub-divided into—mouth with a conic tubular sucker,—mouth without a sucker. The general form of this tribe resembles that of the crab. Like the crab race, too, some of the species are terrestrial, some aquatic, and they have all a wonderful power of shaking off a limb when entangled, and the whole animal in danger. The *grossipes* is dirty red; very minute; inhabits the European seas, and insinuates itself into the shells of muscles, and destroys the fish. The *arenoides* inhabits the Cape of Good Hope and southern Russia; its bite is extremely poisonous, and sometimes deadly. The *cancroides* inhabits Europe, in cellars, and other damp places, and is the little insect that gets into our legs, and under the skin in the summer season, causing painful itching. The best remedy for which is the solution of ammonia and oil applied to the part. See Liniment. The *acaroides* inhabits America; its bite is said to be extremely painful and dangerous. See Poisons. The *opilio*, Long-legged spider, Shepherd spider, or Harvest spider, the first-named species has an ovate abdomen, beneath whitish. It inhabits Europe and America, and wanders about by night. The legs are uncommonly long and slender. When caught by one of them the insect parts with it to save his body, and makes off without any apparent uneasiness. It is not known whether it has the power of reproducing the limb.

Spider, the Red. See Tick.

SPIDER-WORT, or *Anthericum*, a genus of plants comprehending fifty-four species, almost all of them Cape plants. The *serotinum* is, however, indigenous to our Welsh mountains.

Spigelia, or *Indian pink*. See Worm-Grass.

SPIGNEL, Bald-Money, or *Æthusa meum*, is a native perennial, growing in mountainous pastures, chiefly in the northern counties. The roots and seeds have an aromatic smell, and a hot, bitterish taste; they were formerly in the materia medica, but are now unknown.

SPIKE, oil of, is the same as oil of lavender. But what is sold in the shops as common oil of spike, is merely oil of turpentine scented with that aromatic oil, and tinged with some colouring matter.

SPIKENARD, Nard, or *Andropogon nardus*, a species of the genus Andropogon, a tribe of exotic plants, consisting of thirty-two species, the greater number natives of India. The following are the chief: the *schœnanthus*, or Camel's hay, and the *nardus*, the first-named species, Spikenard, Nard, or Sweet rush, highly celebrated for its perfume, but of little importance in any other way.

SPINA BIFIDA, a tumour upon the spine of a new-born child, immediately about the lowest vertebræ of the loins and upper parts of the sacrum; at first it is of a dark blue colour, but as it increases in size, it approaches nearer to the colour of the skin. It is always attended with a weakness, or paralysis of the lower extremities, and requires the attention of an experienced surgeon.

SPINACH, Spinage, or *Spinachia*, a genus of plants, consisting of two species, as follow:

The *Oleracea*, or Garden spinach, with fruit sessile, unarmed, or prickly. Several varieties. The common spinach, intended for winter use, should be sown in an open spot in the latter end of July, if possible, when the weather is rainy. When the young plants are come up, the weeds must be destroyed, and the plants left about five inches asunder. They will be fit for use in October. The most advantageous way of gathering it, is to take off the longest leaves, leaving those in the centre to grow larger; by which means a bed of spinach will furnish a table the whole winter, till the spinach sown in the spring is become fit for use, which is commonly in April. It seems to be similar in its properties to cabbage, but, we believe, less nutricious.

The *Fera*, or Wild spinach, is a native of Siberia.

SPINAL MARROW, or *Medulla spinalis*, in anatomy, a continuation of the medulla oblongata, occupying the hollow canal, or *specus* of the spine. It is composed like the brain, of a cortical and medullary substance; and is covered by a continuation of the dura-mater, pia-mater, and tunica arachnoida. It enlarges about the last vertebræ of the back, and the first of the neck, where the large nerves are given off to the arms; it again enlarges in the loins, where the crual nerves begin; the lower end of it with those and other nerves is called *cauda equina*. The uses of the spinal marrow are to give off through various openings or channels in the vertebræ thirty pairs of nerves, called by different names according to their situation; cervical, dorsal, lumbar, and sacral. These nerves are the organs of sensation and motion to the trunk and extremities of the body.

Wounds in the spinal marrow produce loss of sense in all the parts which receive nerves below it, see below.

SPINDLE TREE, or *Euonymus*, a genus of plants, consisting of seven species, scattered over Europe, Asia, and America, of which one, the *Europæus*, Common prick timber, Louse berry, or Gatteridge tree, is indigenous to the hedges of our own country; it rises, with an upright stem, about ten or fifteen feet in height, having glabrous, opposite leaves. The *Americanus*, a native of Virginia, is frequently propagated in this country, and bears the change of climate well. The wood of the first species, cut while the plant is in blossom, is extremely tough, and is used by watch-makers for cleaning watches, and also by toy-makers for tooth-picks and other small wares. The *berries* are said to be violently emetic and cathartic; and to sheep a deadly poison.

Spindle tree, Bastard. See STAFF TREE.

SPINE, or *Spina*, in anatomy, the bony column or pillar extending from the back part of the head to the bottom of the back, or os sacrum. Although composed of twenty-four bones called vertebræ, in which is contained the spinal marrow, it is vulgarly, but improperly, called the *back-bone*.

The vertebræ are sometimes partially, but hardly ever completely dislocated without fracture. When dislocations occur high up, they are attended with the same symptoms as dislocation of the head; when farther down, besides distortion of the spine, paralysis ensues of every part of the body situated below the luxated bone. In such accidents surgical assistance should at once be had. The best, as well as the simplest method, however, of reducing it, is to lay the patient on his face over a cylindrical body, as a large cask, and at the same time to attempt to replace the bone with the fingers. If the bone be much displaced, there is very little reason to hope for success.

Spinell. See GEM.

SPINNING, the art of reducing silk, flax, hemp, hair, wool, &c. into thread. Spinning is either performed on the wheel, or with a distaff and spindle, or with other machines proper for the several kinds of working. This important operation has been so much improved during the last half century in this country, by the adaptation of ingenious machinery, that it has superseded the use of manual labour to a very great extent, so as to render cotton goods, in particular, cheap beyond all former calculation. See COTTON.

Spiræa. See DROPWORT.

SPIRIT, or SPIRITS, a term applied to liquids of very different qualities. In the common language of life it most commonly implies any inflammable liquor obtained by distillation from a variety of substances that have undergone the vinous fermentation. The substances chiefly employed are the fruit of the vine, from which is obtained brandy; the saccharine matter of the sugar cane, which yields rum; and barley and other grain which gives us that variety which is known by the name of corn spirits, whiskey, geneva, or gin, and for the most parts spirit of wine or alcohol. See ALCOHOL, BRANDY, BREWING, DISTILLATION, FERMENTATION, GIN, RUM, SPIRIT OF WINE, &c.

For the treatment of persons who have drunk spirits to excess, see POISONS.

SPIRIT, in pharmacy and medicine, a term applied to various liquid preparations; chiefly to those which contain more or less ether or alcohol. The following are the chief ordered by the London College:

Spirit of Ammonia. Take of proof spirit of wine three pints; muriate of ammonia four ounces; subcarbonate of

potash six ounces. *Mix*, **and by a gentle heat, from a glass retort in a sand heat, distil over a pint and a half into a receiver which is kept cold. This is chiefly used for the preparation of other medicines. See below**

Aromatic spirit of Ammonia, commonly called *Sal Volatile*. Take of cinnamon bark bruised, cloves bruised, of each two drachms; lemon-peel four ounces; subcarbonate of potash half a pound; muriate of ammonia five ounces; rectified spirit of wine four pints; water a gallon. Mix, and distil from a glass retort in a sand heat, six pints.

Or it may be made extemporaneously thus: Take of spirit of ammonia one pint; of essence of lemon and oil of cloves, of each one drachm; mix them. It should be kept in a bottle having a ground glass stopper.

This is a useful stimulant in languors, flatulent colic, and many spasmodic affections. The dose is from half a fluidrachm to one drachm, in any convenient vehicle.

Spirit of Cinnamon may be made by dissolving half a drachm of the essential oil of cinnamon in one ounce of rectified spirit of wine, and afterwards mixing the solution with one pint of proof spirit. Or take a pound of cinnamon bark bruised, proof spirit a gallon; macerate for twenty-four hours and distil a gallon.

For *Spirit of Camphor*, commonly called *Spirits of wine and camphor*, see SPIRIT OF WINE.

For *Spirit of hartshorn*, see HARTSHORN, AMMONIA, and SPIRIT OF SAL AMMONIAC, below.

Spirit of Horse-radish. Take of fresh horse-radish root sliced, orange peel dried, of each a pound; nutmegs bruised half an ounce; proof spirit one gallon; water sufficient to prevent burning. Macerate for twenty-four hours; and distil a gallon by a gentle fire. See HORSE RADISH.

For *Compound spirit of Juniper*, see JUNIPER.

For *Spirit of Lavender*, and *Compound spirit of Lavender*, see LAVENDER.

Spirit of Nitrous Ether, or Sweet spirit of Nitre. Take of rectified spirit two pints; of nitric acid, by weight, three ounces. Add the acid gradually to the spirit and mix them, taking care that the temperature during the mixture does not exceed 120°; then distil by a gentle heat in a glass retort from a sand heat, twenty-four fluidounces. It has an extremely fragrant odour, and a pungent acidulous taste. It is very volatile and inflammable. It is refrigerant, diuretic, and antispasmodic. It is given in febrile affections to quench thirst, in doses from twenty to fifty drops in a cupful of water, or other convenient vehicle. In larger doses it acts as a gentle stimulant, relieving nausea and flatulence; and also determines to the kidneys, increasing the flow of urine. A mixture of equal parts of this medicine and tincture of opium, is often given with great advantage in doses of from twenty to forty drops or more, in pains of the loins, where there is reason to believe the kidneys are affected.

Spirit of Nutmeg. Take of nutmegs, bruised, two ounces; proof spirit a gallon; water sufficient to prevent burning; macerate for twenty-four hours; then distil a gallon. See NUTMEG.

Spirit of Peppermint may be made by mixing essence of peppermint with proof spirit, in the proportion of one drachm of the essence to a pint of the spirit. Or by distilling from a pound and a half of dried peppermint, and a gallon of proof spirit with a sufficient quantity of water to prevent burning, and macerating for twenty-four hours one gallon.

For *Spirit of Spearmint*, see MINT.

For *Spirit of Rosemary*, see ROSEMARY.

Spirit of Sal Ammoniac, now called by the London College *Solution of Ammonia*, by the Edinburgh College *Water of Ammonia*: Take of muriate of ammonia eight ounces; lime newly burnt six ounces; water four pints. Pour one pint of the water upon the lime, then cover the vessel, and set it aside for an hour; dissolve the muriate of ammonia in the remainder of the water whilst boiling, add to it the former mixture, and again cover the vessel; after the liquor has become cold, strain it and distil in a glass retort, from a sand heat, twelve fluidounces. The receiver should be kept cold. This preparation is a limpid, colourless fluid, has a very strong, pungent odour, an extremely acrid taste, and inflames the skin. Its specific gravity should be only ,9060. It should be kept in bottles well stopped with ground glass stoppers, and in a cool place. Its medical qualities are stimulant, antacid, and rubefacient. It is usefully employed, when largely diluted, in paralysis, hysteria, and fainting; and also in heart-burn, and acidities of the stomach. It is applied to the nostrils in faintings; a rag moistened with it and laid over the pit of the stomach, sometimes raises an instantaneous blister, and by inflaming the skin, is always useful in spasms and gout in the stomach. Combined with a small portion of oil, it is beneficially applied to inflammatory sore throat, and as a friction in rheumatism, &c. See LINIMENT. The dose, taken internally, is from ten to twenty drops in a large cupful of water or milk.

This preparation, when combined with fetid animal oil, is called *Spirit of Hartshorn.*

Spirit of Salt. See MURIATIC ACID.

Spirit of sulphuric Ether, or *Sweet spirits of Vitriol:* take of sulphuric ether half a pint; rectified spirit of wine a pint; mix them. This may be used for the same purposes as ether; but it is much less active. The dose is from one fluidrachm to three.

Compound spirit of Ether: take of spirit of sulphuric ether a pint; of ethereal oil, (see ETHEREAL OIL,) two fluidrachms; mix them. This has been usually called *Hoffman's Anodyne liquor;* and is stimulant and antispasmodic. The dose is from half a fluiddrachm to two. Hoffman's anodyne liquor is, however, not always prepared in this way. The following is, we believe, a superior anodyne:

Take of compound spirit of ether one pint; of crude opium one drachm. Digest for three days and strain. Of this the dose, as a stimulant, antispasmodic, and anodyne, may be from twenty drops to a drachm, or more, in any convenient vehicle.

Spirit of Vitriol. See SULPHURIC ACID.

SPIRIT OF WINE, a name applied to that light, transparent, and highly inflammable liquid, obtained from various saccharine juices, and other saccharine matter, by the vinous fermentation, and by repeated distillation and rectification. From its having been formerly obtained chiefly from wine, it was called spirit of wine. But it may be obtained, not only from wine, but from all kinds of malt-liquors, and cider, and perry, and also by dissolving sugar in water, and causing it, by the addition of yeast, to undergo the vinous fermentation.

If a mixture of one part of sugar, four or five of water, and a little yeast, be placed in a temperature of about 60° it soon begins to ferment, and gives rise to the same products as wort, or grape-juice. And it will be found that the only gaseous product is carbonic acid; and, consequently, that carbon and oxygen are the principles which the saccharine matter loses during the process.

When any of the above-mentioned fermented liquors are distilled, they afford a spirit which is impregnated with, generally, some peculiar taste, in consequence chiefly of an essential oil, which comes over dissolved in the liquor. Thus the spirit obtained from wine is called *brandy;* from the fermented juice of the sugar cane, *rum;* and from wash, *malt spirit.* All these, by the addition of potash, or some other matter, to arrest the oil, &c. on which their flavours depend, and by re-distillation, or rectification, as it is most commonly called, yield the article known in commerce as *spirit of wine,* which, when in a very pure state, is called alcohol. See ALCOHOL.

The different fermented liquors furnish very different proportions of alcohol.

The following table by Mr. BRANDE, exhibits the average proportions of alcohol by measure, existing in 100 parts of several kinds of wine, and other liquors.

	Proportion of spirit per cent, by measure.
Lissa	25·41
Raisin Wine	25·12
Marsala	25·09
Port	22·96
Madeira	22·27
Currant Wine	20·55
Sherry	19·17
Teneriffe	19·79
Constantia, White	19·75
———, Red	18·92
Lisbon	18·94
Malaga	18·94
Red Madeira	20·35
Cape Madeira	20·51
Calcavella	18·65
Grape Wine	18·11
Vidonia	19·25
Claret	15·10
Malmsey Madeira	16·40
Burgundy	14·57
Hock	12·08
Champagne	12·61
Tokay	9·88
Gooseberry Wine	11·84
Orange Wine	11·26
Elder Wine	8·78
Cider, highest average	9·87
Ditto lowest	5·21
Perry	7·26
Ale (Burton)	8·88
Ditto (Edinburgh)	6·20
Ditto (Dorchester	5·56
Brown Stout	6·80
London Porter	4·20
Ditto Small Beer	1·28
Brandy	53·39
Rum	53·68
Gin	51·60
Scotch Whiskey	54·32
Irish do.	53·90

The strength of such spirituous liquors as consist of little else than water and alcohol is, of course, ascertained by their specific gravity, and may be determined with tolerable accuracy, by the hydrometer. See HYDROMETER.

In the Philosophical Transactions for 1794, Mr. GILPIN has given copious and valuable tables of the specific gravity of mixtures of alcohol and water. These are extremely useful, but we cannot make room for them. 100 parts of alcohol, or pure spirit of wine, appears, by the most satisfactory experiments, to consist of

hydrogen	13·70
Carbon	51·98
Oxygen	34·32
	100·00

Alcohol, in its pure state, or mixed in various proportions with water, is a powerful solvent of many saline substances; it dissolves many of the muriates and nitrates, but few of the sulphates. The resins, soaps, extractive matter, and tannin, nearly all the volatile oils, and a few of the fixed oils, are copiously dissolved by it; so also are most of the acids. Ammonia, potassa, and soda, are very soluble in it. Hence its use and importance, both in the arts and in medicine.

Spirit of wine is directed by the London College to be kept of two kinds: *Rectified spirit*, the specific gravity of which is, to that of distilled water, as 835 to 1000, and which is presumed to contain of alcohol about 95 parts, and water 5 parts in 100. A pint, wine measure, of such spirit ought not to weigh quite 13½ ounces, avoirdupoise. The rectified spirit of wine of commerce, is rarely, if ever, found in the shops so pure and light, as the weight here set down. *Proof spirit*, the specific gravity of which is as 930 to 1000, and is presumed to contain about 55 parts of alcohol, and 45 parts of water in 100. A pint, wine-measure, should weigh not more than 15 ounces avoirdupoise. The specific gravity of *pure* alcohol is 796°.

Neither alcohol nor rectified spirit can be congealed at any known degree of cold. The combustion of alcohol produces no sooty deposition upon substances held over it; the products of such combustion are, carbonic acid and water; the weight of the water considerably exceeding that of the alcohol consumed; 100 parts of alcohol affording 136 parts of water. When alcohol is submitted to distillation with certain acids, a peculiar compound is formed called **ÆTHER**, which see. See also the preceding article.

Rectified spirit is a very powerful stimulant and antiseptic. In its undiluted state, it is never exhibited as a remedy, but it is used for various tinctures, and for making proof spirit.

Proof spirit may be made by mixing four parts by measure, of rectified spirit, with three of water; and is, indeed, a purer spirit than the proof spirit sold by the distillers; this last frequently containing oleous impurities from which rectified spirit is in great measure free. The qualities of the diluted are not different from those of the rectified spirit, except in degree. Proof spirit is also, therefore, a powerful stimulant, whether taken alone, or in the shape of tinctures, brandy, rum, geneva, &c. &c. All which, taken properly diluted, and in moderate doses, increase the general excitement, communicate additional energy to the muscular fibres, strengthen the stomach, and exhilarate the mind. But taken in excess, they are slow poisons, destroying the action of the stomach, inducing debility, and a train of nervous diseases, dropsy, liver complaints, a miserable state of mind, and death.

For the treatment of persons who have taken ardent spirits of any kind to excess, see POISONS.

Spirit of wine and camphor. Take of camphor two ounces; rectified spirit of wine one pint. Mix, that the camphor may be dissolved. This is a useful stimulant and discutient application to chilblains, in chronic rheumatism, paralytic numbness, and gangrene. But it is too powerful as an internal medicine, and diluting it with water will cause the camphor to separate.

Spirting Cucumber. See MOMORDICA.

SPITTING OF BLOOD, HÆMOPTOE, or *Hæmoptysis.* This complaint is characterized by coughing up florid, or frothy blood, and is preceded usually by pain or heat in the chest, irritation in the larynx, and a saltish taste in the mouth. It is distinguished from a discharge of blood from the stomach, as in this last, the blood is usually thrown out in considerable quantities; it is, besides, of a darker colour, more grumous, and mixed with the other contents of the stomach; whereas, in spitting of blood, which always comes from the lungs, it is usually in small quantity, of a florid colour, and mixed with a little frothy mucus only.

This complaint comes on, most usually, between the ages of 16 and 25, but it is, nevertheless, not confined to this period, nor to any age or sex. It may be occasioned by any violent exertion, either in running, jumping, wrestling, singing loud, or blowing wind-instruments; and also by wounds, plethora, weak vessels, hectic fever, coughs, irregular living, excessive drinking, or a suppression of some accustomed discharge, such as the menstrual, or hæmorrhoidal. It may be also occasioned by breathing air which is too much rarified to be suitable to the lungs.

Persons who have a narrow thorax, prominent shoulders, or who are of a delicate make, and sanguine temperament, are predisposed to this complaint. It is not, however, always to be considered as a primary disease. It is often only a symptom; and in some disorders, such as pleurisies, peripneumonies, and many fevers, often arises, and is the presage of a favourable termination.

It is unattended with danger, where no symptoms of pulmonary consumption have preceded or accompanied the hæmorrhage; or when it leaves behind no cough, shortness of breathing, or other affection of the lungs; nor is it dangerous in a strong healthy person, of a sound constitution; but when it attacks persons of a weak lax fibre, and delicate habit, it may be difficult to remove. It seldom takes place to such a degree as to prove fatal at once. The danger is therefore, in general, according to the quantity of the discharge. As, however, spitting of blood is always a serious complaint, and requires considerable discrimination in its management, the advice of a physician should at once be obtained.

In the cure of this disease, a cooling and spare regimen, and vegetable diet must be carefully observed, particularly avoiding heat, muscular exertion, and agitation of mind : acidulated drinks may be taken to quench thirst ; and sometimes bleeding freely ; and where there is pain in the chest, blisters, and local evacuations may be useful. The bowels should be well cleared by some saline cathartic, such as Epsom salts, which may be given in the *infusion of roses*. *Fox-glove* will be also a proper remedy, where the pulse is very quick. Antimonials in nauseating doses, are also of service. Sugar of lead given with discrimination and judgment, is often a powerful remedy (See LEAD.) So also are sometimes opiates ; and sometimes the application of cold water to some sensible part of the body, producing general cold, will check the bleeding.

When the discharge is stopped, great attention to regimen is still required, to prevent a return ; and also to the intestinal evacuations. Gentle exercise, in various ways ; a blister, issue, or seton, may be also of service.

In some spittings of blood, accompanied with great debility, evacuations must be sparingly used ; in such cases, tonic medicines, and a more nutricious diet will be proper. See PULMONARY CONSUMPTION.

SPLEEN, MILT, or *Splen*, a spongy viscus, of a livid colour, and so variable in form, situation, and magnitude, that it is hard to determine either. In a healthy man it is always placed on the left side, between the eleventh and twelfth false ribs. Its circumference is oblong and round, resembling an oval figure. It is larger when the stomach is empty, and smaller when it is compressed or evacuated, by a full stomach. The uses of the spleen are unknown.

Inflammation of the spleen, is distinguished by fever, with tension, heat, swelling and pain in the left hypochondrium, which is increased by pressure. The other symptoms are the same as those of inflammation of the liver. The spleen is also said to be subject to what has been termed *chronic* inflammation, which often happens after agues, and is called the ague cake, although this name is also frequently given to scirrhus tumour of the liver, succeeding intermittents. Upon this subject, however, much still remains to be known.

During the acute stage of the inflammation of the spleen, a cooling and spare diet and regimen must be adopted ; and general, as well as topical bleeding, will also be of service ; nor must frequent purging be omitted ; blisters to the part will also be useful. If it should terminate in suppuration, the pus should be discharged externally ; to this end fomentations and the poultice mentioned under abscess, may be advantageously applied. When the organ is in an enlarged scirrhous state, mercury may be cautiously, and, sometimes, successfully employed. But great circumspection is necessary in the administration of this remedy. See LIVER.

The safest course is the application to an experienced physician.

SPLEEN-WORT, MILT WASTE, or *Asplenium*, a genus of ferns, comprehending fifty-nine species, distinguished by having the fructification in straight scattered lines ; involucre, originating laterally from a vein opening towards the tip. They are subdivided into, frond undivided, — divided, — pinnatifid,—pinnate and doubly pinnate. The *ceterach*, and the *trichomanes*, or English maiden hair, were formerly in the materia medica ; but are of no importance.

SPLENTS, in horses, bony excrescences which grow on the inside of the shank bone. They seldom occasion lameness, unless they interrupt the motion of the knee joint, or interfere with the back or suspensory ligament of the leg. Should a splent, however, produce lameness, let it be bathed with camphorated spirit ; or spirit of wine and vinegar ; or the liniment of ammonia, with an addition of oil of origanum, may be employed for the same purpose. Or let some soft linen be moistened with these and bound on the part, keeping it constantly moist. This will generally remove the lameness, but the splent will remain. For the removal of a splent repeated blistering is the best remedy.

SPLINT, a long piece of wood, tin, or strong paste-board, employed by surgeons for preventing the ends of broken bones from moving, so as to interrupt the process by which fractures unite.

SPONDYLUS, a genus of testaceous, bivalve worms, consisting of four species, all exotics. The *gædaropus*, which is the chief species, inhabits the Mediterranean, Indian, and some other seas; shell lightly cased and spinous; found in infinite varieties as to thickness and colour; sometimes entirely purple, orange, white, or bloom coloured; sometimes marked with various streaks, dots, spots, or bands.

SPONGE, or *Spongia*, a genus of zoophyte worms, comprehending forty-nine species, of which the following are most deserving notice:

The *Coronata*, or Crowned sponge, consists of a single tube, and crowned at the tip with a ray of spines; colour pale yellow; rays of the crown bright pearl colour; inhabits the coast of Sussex.

The *Officinalis*, or Common sponge, too well known to need description; inhabits the Archipelago, Mediterranean, and Indian seas, adhering to rocks by a broad base, and is often found inclosing small stones, shells, and particles of sand.

The *Tomentosa*, Downy sponge, or Stinging sponge, is brittle, soft, downy, and interwoven with minutest spines; when fresh, of a bright orange colour, and full of gelatinous flesh; when dry whitish and very light; when broken resembling crumb of bread; upon handling it stings or raises blisters like cow-itch; inhabits the British, African, and Indian coasts, adhering to marine substances.

The *Botryoides*, or Grape sponge, is bright, shining white; the bunches consisting of long oval tubercles, like grapes, open at the end; inhabits the British coast.

The *Lacustris*, or Lake sponge, is creeping, brittle, with erect, round, obtuse branches; found at the bottom of lakes in England and Sweden.

The *Fluviatilis*, or River sponge, is dull green, erect, fragile, with many irregular branches; resembles the last; found in the fresh waters of England, Prussia, and other parts of Europe.

The *Cristata*, or Cock's-comb sponge, is flat, erect, soft, with rows of small pores; yellowish, and growing in the shape of a cock's comb; inhabits the British shores.

The *Patera*, Goblet sponge, or Soonge plant, is the most singular species of the sponge genus. In its form it resembles a goblet with a well-defined base or root, a cylindrical stem, and a capacious bowl or cup. Its texture is non-elastic, composed of numerous tubes, or anastomosing cells; the external surface, or epidermis, is not thicker than the coats of the tubes, and covered with innumerable stellar pores. The bowl is circular or sub-conical, with several nodes or protuberances, and covered both within and without with circular pores of various diameters, the mouths of which are closed with fine cottony fibres, radiating from the circumference to the centre; the same fibrous substance extends over the surface of the bowl; the stem is of the same substance as the bowl. A specimen measured as follows: diameter of the bowl at the brim 17 inches; the smallest at the bottom 7½ inches; in the middle 12½ inches; the circumference of the stem 17 inches, but increasing near the root. The cavity was capable of holding 36 quarts. Found on the shores of the island of Singapore, in the East Indies.

Sponge was formerly considered a doubtful substance, then a vegetable; but now, from more accurate observation, it is found to belong to the animal kingdom. Its uses as an absorbent of water is very generally known. It has also been long used in medicine and surgery. When used as a medicine it is first burnt.

Burnt sponge. Cut sponge into small pieces, and bruise it, in order to free it from any adhering extraneous substances; then burn it in a covered iron vessel until it becomes black and friable; finally rub it into a very fine powder. Some discretion is necessary in performing this operation; no more heat should be used than is sufficient to convert the sponge into a dry, black, friable mass. If more heat be used the sponge will be in some degree decomposed.

Burnt sponge is tonic, deobstruent, and antacid. It has been much recommended in bronchocele, scrofulous affections, and herpetic eruptions; and it is said to have been efficacious in scirrhous testicle, when combined with Peruvian bark. The dose is from one drachm to three, mixed into the form of an electuary with powdered cinnamon and honey. See BRONCHOCELE. We suspect, however, that the chief effect from burnt sponge arises from the ammonia which it contains.

SPOONFUL, a measure or quantity of medicine very often directed in physicians' prescriptions, as well as in books. By *spoonful* is generally meant and understood the measure of half a fluidounce. By *dessert spoonful,* or *medium spoonful,* is meant half the quantity of a spoonful, or a fourth of a fluidounce. It is to be lamented, however, that some more accurate method of administering liquid medicines could not be devised.

If families could be prevailed upon to keep graduated glass measures for this purpose it would be very desirable.

SPOONBILL, or *Platalea,* a genus of birds, comprising three species, as follow:

The *Leucorodia,* or White spoonbill. Three varieties; one with a white body; chin black; hind head sub-crested; another with wings varied with black and white; legs yellowish; and a third having the body all white; legs flesh-colour. Inhabits Europe and Asia, two feet eight inches long; feeds on fishes, frogs, snakes, and grass; builds in high trees, lays from three to four white eggs, powdered with reddish spots; the flesh resembles that of a goose, especially when young.

The *Ajaja,* or Roseat spoonbill, has the body rosy, tail coverts scarlet. Another variety, blood red; neck white; collar black; tail feathers scarlet; two feet three inches long; the first variety inhabits Guiana and Brazil; the last Mexico and Jamaica.

The *Pigmæa,* or Dwarf spoonbill, has the body above brown, beneath white.

This family of birds is named from the broad, flat, and thin structure of the bill, widening towards the end in the form of a spoon. It is seven inches in length, and nearly two in breadth towards the point; it is not hard like the beak of other birds, but soft and flexible like leather; round the upper mandible runs a rim which covers the lower one. In the European species both mandibles are black, or sometimes grey; the beak of the American spoonbill is of a red colour, resembling its feathers.

All the different species are inhabitants, chiefly, of the sea coasts. They are sometimes met with in vast flocks.

Spoon-wort. See SCURVY GRASS.

Spots of Grease, Ink, &c. See INK, SCOURING, &c.

SPRAIN, an extension or unnatural contortion of the muscles, ligaments, and tendons, without dislocation. It generally proceeds from external injury, and is attended with pain, and sometimes swelling and inflammation. As the first object should be to prevent inflammation, cold astringent applications, as water, vinegar, &c. will be proper. The regimen recommended under inflammation must also be adopted. When the pain is excessive, opiates may be taken. When neither swelling nor inflammation accompany a sprain, stimulating liniments will be of servi such as the liniment of ammonia, soap liniment, or Steers's opodeldoc, applied to the part and well rubbed into it; and if the pain be great, tincture of opium may be added to the lotion. If the pain and inconvenience, or inaptitude for motion, continue after the swelling and inflammation have subsided, these stimulating liniments will be proper; or spirits of wine and camphor may be applied. The absurdity of using a sprained limb, although recommended by some medical practitioners, is almost self-evident. The injured parts should be kept, at least during their swelled and inflammatory state, in as relaxed and easy a posture as possible. Nor is it advisable to subject them to much motion for some time afterwards.

Sprain in Horses. See STRAIN.

Sprat. See HERRING.

SPRING, in natural history, a fountain or source of water rising out of the ground. Springs, it is now generally admitted, originate from rain and melted snow which descend into the crannies and cavities of mountains and hills, or indeed plains, where the nature of the ground is such as to admit the passage of water, and flow out in various directions, forming brooks, rivulets, and rivers, for watering the earth, and, also, for the various wants, comforts, and conveniences of the whole animal and vegetable creation; descending, of course, ultimately to the sea, and there again are converted into vapour, ascending into the atmosphere, and again forming rain, &c. See MINERAL WATERS, and WATER.

Spring grass. See VERNAL GRASS.

SPRING-TAIL, or *Podura*, a genus of apterous insects, comprising thirty-one species, all European insects, chiefly natives of Denmark; twelve common to our own country. They are distinguished by a scaly body; tail forked, bent under the body and acting as a spring; legs six, formed for running. They are also distinguished by their frequent jumping or skipping. They feed on the leaves of various plants. The *villosa*, or Rough spring tail, is dark brown, found under stones; the *aquatica* is black, and found on the banks of pools; the *fimentaria* is white, and found in fresh earth; the *atra* is shining, brown, very small, and found in melon beds.

Spruce. See PINE.

Spruce Beer. See the following article.

SPRUCE, ESSENCE OF, an extract prepared chiefly in Canada, or the Northern States of America, from the branches of the spruce fir. See PINE.

Essence of Spruce, for the making of which a patent was many years since taken out, is, or ought to be, made thus: Submit the fresh branches of the spruce fir to distillation, with a sufficient quantity of water to prevent burning. A balsamic and somewhat fragrant essential oil will come over. Afterwards draw off the water in which the branches have been distilled, and boil it down to the consistence of an extract, to which add the previously distilled essential oil. This extract is used for flavouring spruce beer, and is imported from Canada and America; not being, as far as we know, ever made in this country.

Spruce beer is usually made by mixing thirteen pounds of treacle with twenty gallons of warm water; about eight ounces of essence of spruce, and a suitable portion of yeast; after slight fermentation for a day or two, it is drawn off into stone bottles, which should be well corked and laid in a cool cellar, where the fermentation will be completed, and a considerable quantity of carbonic acid gas be disengaged, so as to make it a lively and agreeable cooling liquor. It is a cheaper beverage than soda water, and for some complaints of the urinary passages, is, we believe, superior; chiefly, we presume, from the terebinthine quality of the spruce. It is also esteemed antiscorbutic. The essence is often taken out on long voyages, as part of the ship's stores, for making the beer.

Spunge. See SPONGE.

SPUNK, or *Boletus*, a genus of fungi, characterised by possessing pores underneath, and consisting of sixty species, many common to our own country. The following are most deserving notice: The *bovinus*, or Low spunk, of a brown, tawny, or yellowish-brown colour, varying to a red, purple, or greenish brown; flesh, reddish yellow, or white. It is said to be injurious if eaten by cattle; it is, however, eaten, dressed in a peculiar manner, by both Germans and Italians; found in our own woods and pastures. The *ignarius*, or Touch-wood spunk, is frequent on the trunks of all kinds of old trees, but most commonly on the ash; its substance is hard and ligneous, shape horse-hoofed; size from that of the human fist to the human head, and sometimes larger; colour various; flesh tawny brown. The dried flesh catches fire like tinder, from the sparks of a flint and steel; whence its name. The *pini laricis*, or Agaric, is found on old larch-trees. This and the preceding sometimes used in medicine as styptics. The *suberosus*, or Cork spunk, is commonly found on the trunks of birch and willow-trees; grows sessile and horizontal; size from a horse's hoof to a peck measure; the internal substance like cork; and, in Scotland and some other countries, it is occasionally used in the place of corks. The *lachrymans*, or Dry-rot, found, as well as many other of the species, in damp, dark places. See DRY-ROT. Some of the species have stems, others are stemless.

SPURGE, or *Euphorbia*, a genus of plants comprehending one hundred and twenty species, natives of warm climates; some few of our own country. They are subdivided thus: shrubby, prickly,—shrubby, unarmed; stems not forked, nor umbelliferous,—forked, umbel bifid, or none,—umbel three-rayed,—umbel four-rayed,—umbel five-rayed,—umbel many-rayed. They all produce a highly pungent and acrimonious fluid, discharged upon puncturing, in appearance like milk; and by this appearance many of the species may be distinguished from the cactus, which they resemble in external character. The acrimony of the juice of several species is so great as to prove a fatal and almost instantaneous poison. The Hottentots poison their arrows from a preparation of the juice; and they also poison animals, by infusing the leaves in the waters which they frequent. There is one species, however, the *balsamifera*, which produces a pleasant and salutary balsam. The rest which deserve notice are the *canariensis*, said to produce the gum Euphorbium. See EUPHORBIUM. The *cyparissus*, or Cypress spurge. The *officinarum*, or Common spurge. The *palustris*. The *paralis*. And the *petiolaris*, or Long-stalked spurge, an elegant plant, a native of the West Indies, and, like the other tropical euphorbias, should be kept in the dry stove.

Some of the above-mentioned species were formerly in the materia medica; except that producing the gum euphorbium, modern medicine takes no notice of this genus of plants, but as poisons. See POISONS.

Spurge laurel. See MEZEREON.

SPURREY, the CORN, or *Spergula*, a genus of plants consisting of seven species; four common to the corn-fields, moist sands, and wet mountains of our own country. The chief is the *arvensis*, or Common corn spurrey, with leaves in whorls; flowers small, white, terminal, seeds kidney form; it is cultivated in Holland on unthrifty soils, where it will grow as food for cattle. Poultry are fond of the seeds, which in Finland and Norway are sometimes used for bread.

SPURS, well-known instruments affixed to the heels of horsemen, in order to excite the horse, by pricking him, to a brisker motion. Whatever may be said of the expedience of spurs, humanity must condemn them.

Squash gourd. See GOURD.

SQUILL, or *Scilla*, a genus of plants comprising seventeen species, chiefly natives of the south of Europe, a few of Japan and Africa; four indigenous to the groves, rocks, pastures, or thickets, of our own country. The following are cultivated. The *lilio*, Hyacinthus, lily-rooted squill, or hyacinth lily, with blue flowers. The *Italica*, or Italian squill, with a lily root, and white flowers. The *Peruviana*, or Peruvian squill. The *amœna*, or Nodding squill, with violet-blue flowers. The *campanulata*, or Spanish squill, with deep violet flowers. The *autumnalis*, or Autumnal squill, and the *nutans*, or Hare-bell.

The *Maritima*, Officinal squill, or sea onion, is a native of Spain, Sicily, Syria, and Barbary, and flowering in April and May. The bulb is large, sometimes nearly the size of the human head, and of a pear-shape. They are brought to this country generally from the Levant, and may be preserved fresh for some time in sand, but as they are apt to spoil, they are best preserved for medicinal use in a dried state, by cutting them in segments, and exposing them to the heat of a moderate fire.

The squill bulb is inodorous; but its taste is bitter, nauseous, and acrid; and when much handled, it inflames and ulcerates the skin. In small doses, it is expectorant and diuretic; in larger doses, emetic and purgative. From its stimulant properties, it cannot be given with propriety in pulmonary inflammation, until the inflammatory stage is past, after which it proves useful in relieving the difficulty of breathing. It is usefully combined with nitre, tartarized antimony, or ipecacuanha: and in asthma, and difficulty of breathing without fever, combined with ammoniacum, it is often an efficacious remedy. In dropsy, conjoined with a mercurial and opium, it is also advantageous. It is a very uncertain emetic. The dose of the dried bulb in powder (which should be kept in a close-stopped bottle, as it rapidly attracts moisture from the air) is at first, one grain, which may be given in the form of a pill, with soap, morning and evening, or every six hours; gradually increasing the dose to five or six grains, or until some degree of nausea is induced, and its expectorant or diuretic effect obtained.

The following preparations are ordered by the London College.

Vinegar of Squills. Take of fresh squill-root (bulb) dried, four ounces; of distilled vinegar one pint and a half; of proof spirit two ounces. Macerate the squill-root in the vinegar, with a gentle heat, for twenty-four hours; then express the liquor, and set it aside, that the feculencies may subside, lastly, add the spirit to the clear liquor.

This is expectorant and diuretic, in chronic catarrh, humoral asthma, and dropsies. The dose is from half a fluidrachm to two fluidrachms. In larger doses it produces vomiting, and is occasionally used in the above diseases, when the stomach is loaded.

Oxymel of squill. Take of honey one pound and a half; vinegar of squills one pint. Boil in a glass vessel over a gentle fire, to a proper consistence. The dose, as an expectorant in asthma and obstinate coughs is, from half a fluidrachm to two fluidrachms, in some aromatic water, such as cinnamon. In larger doses, it is given to excite vomiting, and at the same time clear the chest, as in hooping cough. It is said also to be useful for such purpose in croup.

Tincture of squills. Take of the fresh squill-root dried, two ounces; of proof-spirit one pint. Macerate for fourteen days and filter.

This is given for the same complaint as the preceding preparations. The dose is from ten drops to twenty in almond mixture; ammoniac mixture, or mucilage.

SQUINTING, or *Strabismus*, an affection of the eyes, occasioned by the optic axis not converging, in consequence of which, the eyes appear as if looking towards the nose, temples, forehead, or cheeks.

It may arise from various causes, one of the most common is, in having vivid objects presented to the eye during infancy, in a position so as to divert it out of its natural position; and by habit it may thus become in great measure incurable. It may, however, arise from some mal-conformation of the eye itself, or from some disease or diseased action of the muscles, upon which the motions of the eyes depend, or from some fault in the conformation of the eye, crystalline lens, &c.

In confirmed cases, the cure is to be effected by mechanical contrivances, by which the person may be obliged to look straight upon objects, or not see them at all; or, at least, that he may see with uneasiness, and confusedly, when he squints. Infants should be carefully excluded from intense light coming to them in any oblique direction, in order that no habit of squinting may be induced. And some cases of confirmed squinting may be cured by covering the eye which is not affected, many hours a day, by which the squinting eye will be exercised in a different manner, and most probably recover its proper direction. The advise of an optician in the cure of this complaint will often be of great service.

SQUIRREL, or *Sciurus*, a genus of animals consisting of thirty-eight species, thus subdivided; without flying membrane; climbers: thirty species—with a flying membrane: eight species. They are distinguished by two fore-teeth, upper wedged, lower acute; grinders upper on each side five, lower four; whiskers long. They are usually active, elegant, easily tamed, climb dexterously, and leap from tree to tree; a few are subterraneous; they live mostly on seeds and fruits; some leap in running; others are furnished with a flying membrane; tail long, hairy, generally turned over the back. The following are the chief:

The *Vulgaris*, or Common squirrel, has the head, body, legs, and teil, reddish brown; breast and belly white; eyes, large, lively, black. In Sweden, and Lapland, it changes its colour to grey in winter, In many parts of England, a beautiful variety, with milk-white tails. Inhabits Europe, the temperate parts of Asia; a variety found in Ceylon. It is a neat, lively, active animal, living always in woods; it makes its nests, which are called *drays*, with dried leaves, bits of sticks, &c. in the fork of two branches of some tree, with two entrances to it. The female is gravid a month, and brings from three to seven young at a time. It lays in a hoard of winter provisions, such as nuts, berries, and acorns. In summer, it feeds on buds and young shoots, and is particularly fond of those of the fir and the young cones, on which trees it frequently constructs its nest. They sit up to eat, and use their fore-feet as hands. Several varieties, and of different colours, grey, white, black, and some much larger than our common squirrel. The flesh of these animals is said to be good. The skins are, of course, valuable.

The *macrourus*, or Ceylon,—the *abyssinicus*, or Abyssinian, — the *bicolor*, or Javan, — the *Indicus*, or Bombay — the *erythræus*, or Ruddy squirrel, are found in the East Indies, and other parts of the East. The *cinereus*, or Grey squirrel, inhabits various parts of North and South America, and is very mischievous to plantations of maize. Their furs are valuable and imported under the name of *petit gris*. The *niger*, or Black, —the *hudsonius*, or Hudson's bay,—the *variegatus*, or Varied,—the *flavus*, or Fair,—the *æstuans*, or Brasilian, and the *mexicanus*, or Mexican squirrel, are also Americans, and differ chiefly in colour and size.

The *Palmatum*, or Palm squirrel, lives much in cocoa-trees, and drinks palm wine, does not erect its tail like other squirrels; not three inches long; inhabits the hot parts of Asia and Africa. The *getulus*, or Barbary squirrel, inhabits Barbary; size of the common squirrel. The *badjing*, or Plantain squirrel, is found on Plantain and tamarind trees; inhabits Java and Prince's island.

The following are distinguished by having a flying membrane extended from the fore to the hind leg of each species.

The *Sagitta*, or Javan flying squirrel, inhabits Java, and other of the Indian islands, leaps from tree to tree as if he flew; size varying from that of a common squirrel to that of a hare; length usually eighteen inches; tail fifteen inches; body bright bay, breast and belly yellowish white.

The *Volucella*, or Flying squirrel, is much less than the common squirrel; colour above brownish ash; beneath white, tinged with yellow. Inhabits

North America and New Spain; inhabits hollow trees, and sleeps during the day, but is lively in the night; gregarious; leaps from bough to bough, sometimes to the distance of ten yards; food the same as other American squirrels. The flying membrane when stretched out, enables the animal to swim.

The *Hudsonius*, or Hudson squirrel, found in the southern parts of Hudson's Bay; the *virginianus*, Virginian, or hooded squirrel; the *volans* or Lapland flying squirrel, and the *australis*, or Southern flying squirrel, inhabiting New South Wales, and the largest and most elegant of its tribe, are all we can enumerate.

Squirrel fish. See PERCH.

St. Anthony's fire. See ERYSIPELAS.

St. Vitus's dance. See SAINT VITUS'S DANCE.

STABLE, a covered room or building, appropriated chiefly to the shelter, feeding, &c. of the horse.

The situation of a stable should always, if possible, be in a pure air, and on a firm, dry, hard, and somewhat elevated spot. It should be large in proportion to the number of horses which it is designed to contain; and, as great inconveniences arise from keeping many horses in the same apartment, no stable should have, at one time, more than five or six horses in it. Double headed stables should never be used, as accidents, by the horses kicking each other, very often happen in such places. The roof of a stable should be lofty; and however convenient it may be, it is a bad plan to have the hay loft over the stable: the most wholesome stables are those where nothing intervenes between the roof and the floor; roofs made of unplastered, or unpointed tile, afford the best mode of ventilation; the walls should be made of stone or brick. The width of a stall should not be less than six feet, and the floor should slope from the manger forward, in the proportion of one inch to a yard. Proper drains for conveying away the urine should also be contrived. The partitions of the stalls should be sufficiently high to prevent the horses from injuring each other, or themselves. The admission of sufficient light into the stable, should be more attended to than it generally is; it is a mistake to suppose that horses feed best in the dark. The windows should either be sashed or have large casements so that air may be admitted at pleasure. Window shutters may also be occasionally useful. Stables are, in general, paved with stone; but some persons choose to have the part on which the horse lies of wood; this is, however by no means necessary, and tends to keep the animal too hot. Two rings should be placed on each side of the stall for the horse's halter to run through, and a logger should be fixed to poise it perpendicularly, but not so heavy as to tire the horse. The rack should be, of course, at the upper end of the stall; although many persons object to a rack, as causing the animal to lift his head up too often in an unnatural posture; such prefer laying the hay in a trough on the ground, or sprinkling it on the litter. There is usually beneath the rack in most stalls, a trough called a manger, but a moveable drawer may be contrived which will be equally useful, and may be cleaned at pleasure. It should not be forgotten, that the more airy all stables are kept, as long as no immediate current of air passes over the horse, the better, and that the hotter the stable, the more dangerous to his health.

All the dung and foul litter should be removed from the stable every day, and by no means be suffered to lie in a heap in any part of it for a longer period.

For *Fumigation of stables*, see FUMIGATION and CONTAGION.

STAFF-TREE, or *Celastrus*, a genus of plants comprehending thirty-two species, scattered over Asia, Africa, and America, but chiefly natives of the Cape. They are thus sub-arranged:—unarmed, leaves very entire,—unarmed, leaves toothed,—spinous, leaves very entire,—spinous, leaves toothed. The *bullatus* and *scandens*, both North American plants, are those most commonly propagated in this country. The first is a shrub rising about four feet high, with white terminal flowers in spikes, appearing in July, and succeeded by beautiful scarlet fruit. The second is a lower shrub, with green flowers, appearing in June, and succeeded by red berries in Autumn.

Staffa. See BASALT.

Stag. See DEER.

STAG BEETLE, or *Lucanus* a genus of coleopterous insects, consisting of twenty-six species; distinguished by jaws projecting beyond the head so as to resemble horns, toothed ; they are scattered over the globe ; three species common to our own country, and are some of the largest of the British insects. The following are the chief; The *cervus*, or Stag beetle, is readliy distinguished by its superior magnitude, as well as by its jaws resembling in form the horns of a stag, whence its specific name. The colour of the whole animal is uniformly of a deep brown. Its common residence is the oak, and though the largest of all the coleopterous class in this part of the world, is much smaller than those of the same species in countries where woods are more extensive, and the climate warmer. In these last quarters they acquire an amazing strength and vigour, and bite very severely. The *parallelopipedus*, or parallelopipid beetle, is black, horns smaller than the preceding ; found in meadows.

Stag evil. See LOCKED JAW OF HORSES.

Stage coach. See COACH.

STAGGERS, a disease to which horses are liable, but which does not appear to be very accurately described. Sometimes the animal 's stupid and almost motionless : at other times he is restless and staggers about as if mad. Many writers consider the disease of the same nature as apoplexy, and by others it has been described as a lingering disease, produced by eating some poisonous herbs. One of the chief complaints called the staggers is, however,

Inflammation of the brain, which is indicated by violent delirium, redness of the membranes of the eyes, and strong pulsation of the temporal arteries ; the animal often becomes quite furious, so that, during the paroxysm, it is dangerous to approach him. After a little time he generally becomes quiet, and sometimes lies down, apparently in a dying state ; the delirium, notwithstanding, returns with equal, or even greater violence. In this way the animal sometimes continues for two or three days, when, if he be not relieved, suppuration takes place in the brain, and he dies.

In the cure of this complaint, early and copious bleeding is the grand and essential remedy ; both temporal arteries should be opened, and allowed to bleed till the horse becomes perfectly quiet, or even faints. If this cannot be accomplished, both jugular veins should be opened, and the bleeding continued, by tying a cord round the neck, so tight as to keep up a constant flow of blood from both orifices ; but the cord should not be applied till the veins have been opened.

To prevent a recurrence of the disease, a purge should be given ; and it will be necessary for some time afterwards to feed the animal rather sparingly, principally with bran mashes, or green food.

Another species of the staggers is produced by either eating rank grass, which grows on the banks of rivers ; or by eating freely of any food that is difficult of digestion. The best remedy for it is a powerful stimulant, with a purgative to evacuate the contents of the stomach which is overloaded with undigested food. The following ball should, therefore, be given as soon as the complaint is apparent. Take of calomel three drachms ; of carbonate of ammonia two drachms ; of ginger three drachms ; Barbadoes aloes six drachms ; honey enough to form a ball. This should be followed by some stimulating fluid, as warm salt water, with a little compound spirit of ammonia or mustard.

The hard dung should be drawn from the rectum, and opening clysters injected. See CLYSTERS FOR HORSES. When the dung becomes soft, and the horse appears to be getting better, let him drink frequently oatmeal or wheat-flour gruel; a little cordial medicine may also be given; but he must be fed with great care, and be allowed no hay for a few days after his recovery.

Staggers in sheep, principally attacks young lambs, which fall down; and if not timely relieved, they soon die. The best remedy is to bleed them frequently in the eye vein; a purgative and purging clyster will be also of service.

Staining. See MARBLING.

STAINING of GLASS, an ingenious process by which glass is given various colours and shades. We merely mention this subject in order to refer our readers to a valuable paper of Mr. WYNN'S, published in the 35th Volume of the Transactions of the Society of Arts, relative to *Enamel colours,* and to *Staining and Gilding Glass.* The paper cannot be advantageously abridged, and our limits prevent its entire insertion.

STALACTITES, a genus of calcareous earths, consisting of carbonate of lime, carbonic acid and water; found chiefly on the roofs and sides of arches, and the caverns of calcareous mountains. It is formed in the air by the gradual deposition of the water. It is in various shapes and sizes, globular, nodulous, fistulous, cylindrical, &c. &c.

STALING, a term used to signify in a horse, and some other animals, the act of evacuating the urine from the bladder. It is a humane and necessary practice to suffer horses to void their urine at full leisure, and to encourage them to it by whistling or any other of the soothing methods, which they may understand.

Stallion. See HORSE.

STAMEN, in botany, the third part of fructification, consisting of the filament and anther. See BOTANY, and FLOWER.

STAMMERING, or *Psellismus,* if not a disease, is, at least, a very bad habit: it sometimes may be the effect of a wrong conformation of the tongue, or the organs of speech; in such case it is with difficulty, and sometimes never removed. The chief cause, however, of stammering, arises from speaking with too much haste. If persons who stammer, will adopt the habit of speaking cautiously and slowly, and never, on any account, attempt hasty articulation, this inelegant and vulgar mode of speaking may, in general, be easily overcome.

STAPELIA, a genus of plants comprising fifty species, almost all Cape plants, thus subdivided: corols five-cleft, divisions hairy at the edges,—corols five-cleft; the segments glabrous at the edges,—corol ten-toothed,—division unknown. The following are cultivated: the *hirsuta,* Carrion flower, or hairy stapelia, has the flower yellowish, with blackish transverse streaks. The flower smells so abominably, and so nearly resembles in its smell putrid flesh, as to deceive the flesh-fly, who deposits its eggs on it, where the larvæ die for want of proper nutriment. The *variegata,* has the flowers of a clearer white, the petals larger; a native of the Cape.

STAPHYLINUS, a genus of coleopterous insects, consisting of one hundred and fifty-six species. They are extremely rapacious, devouring every insect they can catch, and frequently each other. The *maxillosus* is the largest British insect of the genus. It is black; the jaws are sharp, hard, and rather longer than the head; the legs are long; each of the tarsi has a tuft of hair resembling a brush.

STAPHYLOME, a disease of the eye-ball, in which the cornea loses its transparency, rises above the level of the eye, projects beyond the eye-lids, and is attended with total loss of sight. It is produced by various causes; sometimes by contusions, and sometimes by the small-pox.

STAR-APPLE, BULLY-TREE, or *Chrysophyllum,* a genus consisting of seven species, all natives of the West Indies, the chief of which are the *cai-*

nito, a Jamaica tree, rising thirty or forty feet in height, with terminal flowers, and fruit about the size of our golden pippin, rough and astringent when fresh, but pleasant when mellowed after the manner of our own medlar. There are other varieties of this species. The *glabrum* is a native of Martinico, not so tall as the former, but has a more juicy and delicious fruit. About the size of a bergamot pear.

STAR OF BETHLEHEM, or *Ornithogalum*, a genus of plants consisting of forty-three species, natives of the south of Europe, Siberia, and the Cape: three common to our own country. The species chiefly cultivated are the *umbellatum*, or Umbelled; the *luteum*, or Yellow; the *minimum*, or Small, the *Pyrenaicum*, or Pyrenean; the *latifolium*, or Broad-leaved; the *pyramidale*, or Pyramidal, the *unifolium*, or One-leaved, the *nutans*, or Neapolitan, the *aureum*, or Golden star of Bethlehem, and the *capense*, or Cape ornithogalum. Many of these are hardy, and highly ornamental among other flowering bulbous-rooted plants, in borders and clumps. They are perennial and may be propagated by offsets from the roots.

Star-fish. See SEA-STAR.

STAR-GAZER, or *Uranoscopus*, a genus of fishes comprising two species, as follow: the *scaber* with a large square head, mailed with a bone sprinkled over with minute warts, and which terminates above in two, beneath in five spines; tongue thick, strong, short, covered with minute teeth; eyes vertical, approximate; body covered with small scales; above brown, at the sides cinereous, beneath white; flesh good, but tough; length about a foot; inhabits the Mediterranean. The *japonicus*, has the back with a row of spinous scales; body above yellow, beneath white; half a foot long; inhabits the seas round Japan.

STAR-GRASS, WATER STAR-WORT, WATER FENNEL, or *Callitriche*, a genus of one species only, the *verna*, found wild in the ditches of our own country. It grows thickly matted upon the surface of water.

Star-wort. See MICHAELMAS DAISY.

STARCH, or *Amylum*, a white fecula which exists in a great variety of vegetable substances; it is contained in the esculent grains, and many roots.

The process for obtaining starch, consists in diffusing the powdered grain or the rasped root in cold water, which becomes white and turbid; the grosser parts may be separated by a strainer, and the liquor which passes deposits the starch, which should be washed in cold water, and dried in a gentle heat.

The common process for obtaining the starch of wheat, consists in steeping the grain in water, till it becomes soft; it is then put into coarse linen bags, which are pressed into vats of water; a milky juice exudes, and the starch falls to the bottom of the vat. The supernatant liquor undergoes a slight fermentation, and a little vinegar is formed, which dissolves some impurities in the deposited starch, it is then collected, washed, and dried in a moderate heat, during which it splits into the columnar fragments which we meet with in commerce; such starch is usually made slightly blue by a little smalt, or, most probably, indigo.

Pure starch is a white powdery substance, insoluble in cold water, but readily soluble in hot water, when at a temperature between 160° and 180°. Its solution is gelatinous, and, by careful evaporation, yields a substance resembling gum in appearance. Starch forms a blue compound with iodine. It appears by a reference to the ultimate elements of starch and sugar, that they differ little in composition, and it is, therefore, not surprising that the former is easily convertible into the latter. See MALT. Starch is, nevertheless, much better calculated for human food than sugar, as it does not appear to undergo in the stomach that peculiar change which saccharine matter frequently does, producing flatulence and other unpleasant symptoms. Besides the great importance of starch as a large constituent of various vegetable aliments, it is used for various purposes in the arts and manufactures; and also occasionally as a medicine; chiefly, in this respect, as a vehicle for more active remedies. See MUCILAGE.

STARE, STARLING, or *Sturnus*, a genus of birds, comprehending seventeen species, scattered over the globe; two only common to our own country. The following are the chief:

The *Vulgaris*, or Common starling, has the bill yellow; body black with white dots; the colours, however, vary; sometimes they are a beautiful green and purple, and sometimes white; nine inches long; inhabits Europe, Asia, and America, and common to our own country. These birds are exceedingly gregarious, associating during the winter months, in well-arranged battalions, and even with other birds not of their own tribe. The males are very pugnacious, fighting during the pairing season for the females with much rancour, the females themselves being the while passive spectators. Their docility and the beauty of their plumage have rendered them great favourites. They have been taught to speak and sing song-tunes. Sterne has immortalized this bird in his Sentimental Journey.

They feed on insects and worms; but their flesh is so bitter as to be scarcely eatable. Eggs four or five, of a pale green; nest generally a deserted one of some other bird in a hollow tree, a ruinous edifice, or the cliff of a rock.

The *Capensis*, or Cape starling, is blackish, beneath and sides of the head white; size of the last; inhabits the Cape of Good Hope.

The *Ludovicianus*, or Louisine starling, is above brownish grey, beneath yellow; in size and habits similar to the common starling. Inhabits, in vast flocks, the interior regions of North America.

The *Cinclus*, Water Ouzel, or Crake, is above black, breast and chin white, belly ferruginous; seven and a quarter inches long; solitary; feeds on aquatic insects and small fishes; breeds in the holes of banks; inhabits Europe and Northen Persia, and found in our own country.

Statistics. See ACRE, POOR, POPULATION, &c.

Staves' Acre. See LARKSPUR.

Stays. See DRESS.

STEAM, a name applied to the visible moist vapour which arises from all bodies which contain juices easily expelled from them by heat not sufficient for their combustion. It is, however, more usually applied to the vapour arising from water at various degrees of heat. Very hot steam has been for some time used as a moving power in *steam engines*; and it has latterly been brought into use for a variety of purposes in domestic economy, heating rooms, cooking, &c. &c.

The *Steam engine* is one of the most important machines that has ever been invented. Its principle is as follows: there is a forcing pump with its rod fixed to one end of a lever, which is worked by the weight or pressure of the atmosphere upon a piston at the other end, a temporary vacuum being made below it by suddenly condensing the steam that had been let into a cylinder in which the piston works, by a jet of cold water thrown into it. A partial vacuum being thus made, the weight of the atmosphere presses down the piston, and raises the other end of the straight lever loaded with water, &c. when adapted to a mine. Then, immediately a hole is uncovered in the bottom of the cylinder, by which a fresh supply of hot steam rushes in from the boiler, which acts as a counterbalance to the atmosphere above the piston, and the weight of the pump rods at the other end of the lever carries that end down, and, of course, raises the piston of the steam cylinder. The orifice for the emission of the steam is immediately shut, and the cock opened for injecting the cold water into the cylinder: this condenses it to water, and another vacuum is made below the piston, which is now again forced down by the weight of the atmosphere, and thus the work is continued as long as water and fuel are supplied. This is the common principle of the steam engine, but the methods of operation are very various. And patents are still annually obtained for improvements, or professed improvements of this machine.

The late Mr. **James Watt** effected great improvements in the steam engine. Previously to his inventions it had been used chiefly as an hydraulic machine for draining mines, or for raising water; but in consequence of Mr. Watt's, and other subsequent improvements, it has for a series of years been employed as the first mover in almost every species of machinery. In its present improved state the mechanism is extremely curious, though as simple as can well be expected, considering its nature, power, and object. Our limits preclude our enlarging; further particulars may be obtained from the Pantologia, article **Steam Engine.**

For some account of cooking by steam, our article **Boiler** may be consulted. Rooms may also now be warmed by steam in a very convenient and economical manner. We may mention here that in every steam apparatus there must be a *boiler* to create and compress the steam; *pipes* to convey it to a distance; *receptacles* to receive it for the purposes for which it is designed; *waste pipes* to convey away the cooled water; and a *safety valve* at the boiler to regulate the pressure of the steam.

The *boiler* is usually made of copper; and of whatever size it may be wanted, and for whatever domestic purpose steam may be desired, the boiler must be essentially the same. It is the fundamental article of every steam apparatus.

Rooms are usually warmed by an open copper cylinder with hollow sides, having a pipe communicating from the steam boiler, which may be in a cellar, or out-building. This cylinder is usually the shape of a frustum of a cone with ends, the upper of which may be ten inches, the lower may be twelve or fourteen inches in diameter. It is open at top and at bottom, and has hollow closed sides, containing a space for the circulation of hot steam, about one inch in thickness, so that the greatest quantity of heated surface is by these means presented to the air of the apartment both within and on the outside of the cylinder; and, of course, the warm air ascends through the open cylinder from the bottom to the top; all the cold air of the apartment thus passing through the heated open cylinder till every portion has become equally warm. The cylinder may be, and sometimes in parlours is, varnished or japanned, and placed in such a part of the room, so as to be neither incommodious nor unsightly.

In all the apparatus, copper is commonly employed; and from its elasticity and ductility, no better metal can be found; besides, it is not so readily oxidated as iron.

It has been found that at a comparatively trifling cost, every purpose of culinary fires may be effected by the steam apparatus, except that of roasting meat; that heating, boiling, washing, brewing, baking, drying, &c. &c. may be most advantageously carried on; and that for washing, cooking, &c. in the large way, no other method answers so well. Steam is now also applied to copper-plate printing, to warming hot-houses, to heating water in large breweries, &c. &c.

For an account of the Steam Boat, see **Boat, Steam.**

As a conclusion on steam, we may add, it has been determined by experiment, that a steam engine, whose cylinder is 31 inches in diameter, and makes 17 double strokes in a minute, is equivalent to 40 horses working day and night, and burns 11,000 pounds of Staffordshire coals per day. When the cylinder is 19 inches, and the engine makes 25 strokes, of four feet each, per minute, its power is equal to that of 12 horses working constantly, and burns 5500 pounds of coal. Mr. **Boulton** estimated the power of an engine thus: 1 bushel, 84 pounds of Newcastle coal, will raise 30 million pounds one foot high; that it will grind and dress 11 bushels of wheat; that it will slit and draw into nails 5 cwt. of iron; that it will drive 1000 cotton spindles, with all the preparation machinery, with the proper velocity; and that these efforts are equivalent to the work of 10 horses.

Stearine. See Fat.

Steatite. See Talc.

STEEL is a compound of iron and carbon, the proportions being variable. It is, in general, extremely brittle; it is also very hard, and receives a fine polish; hence its importance for the formation of all cutting instruments and tools.

Iron is converted into steel by a process called *cementation*, which consists in heating bars of the purest iron in contact with charcoal; it absorbs carbon, increases in weight, and acquires a *blistered* surface. This, when drawn down into smaller bars and beaten, forms tilted steel; and the same broken up, heated, welded, and again drawn out into bars, forms *shear steel. English cast steel* is prepared by fusing blistered steel with a flux composed of carbonaceous and vitrifiable ingredients, casting it into ingots, and afterwards by gentle heating and careful hammering, giving it the form of bars.

If steel be heated nearly red hot, and plunged into cold water, it becomes extremely hard and brittle, and is in that state used for files, which are the hardest of all steel instruments.

Different cutting instruments require different degrees of hardness, which is given to them by the process called *tempering*; when the outside only is hardened, it is called *case-hardening*. It consists in heating the hardened steel up to a certain point; and as, at different temperatures, its surface acquires different colours, in consequence of oxydizement, it has been customary to judge of the *temper* by the colour. The first change of colour is between 430° and 450°, when it becomes pale yellow, and is used for razors and other instruments, in which a strong back supports a very keen edge. At 470° it becomes full yellow, and is used for pen-knives. At 490° it becomes brownish, and is used for scissors. At 510° it is slightly purple, and is used for pruning and pocket knives. At 530° purple, for carving knives. At 550° blue, for springs, sword blades, &c.; and at 600° it becomes nearly black and very soft.

An improved mode of tempering steel, consists in immersing the goods in oil or quicksilver, which is then raised to a due degree of heat, indicated by the mercurial thermometer.

Wootz, or *Indian steel,* has lately attracted much notice, from its always presenting a damasked surface, and from the permanence of the edge when it is made into cutting instruments.

A paper on the analysis of wootz may be seen in the Journal of the Royal Institution, Vol. VII.; and another important and valuable paper, detailing *Experiments on the alloys of steel,* by Mess. Stodart and Faraday, in Vol. IX. of the same Journal, is highly deserving attention. These gentlemen not only formed artificial wootz, but they made many discoveries of the utmost consequence in the arts. We can only mention, that an alloy of one part of silver with 500 parts of steel, has been found superior to the very best steel, and that various cutting tools have been made from it, of the best quality. The alloy of steel with rhodium, in the proportion of one or two per cent of the latter metal, is even superior in hardness to the alloy of steel with silver. The alloys of steel with platinum also promise much utility; equal parts by weight form a beautiful alloy, which takes a fine polish, and does not tarnish; the colour the finest imaginable for a mirror. The specific gravity of this compound is 9,862. See Iron.

STEEL-YARD, or Still-yard, a kind of balance by means of which different commodities are weighed. It is, however, very liable to deceit, and therefore cannot, in general, be depended upon.

STEERS' OPODELDOC, a quack medicine, which is made thus: Take of white soap two pounds; of yellow soap one pound; water three pints, rectified spirit of wine three pints; camphor four ounces; oil of rosemary one ounce; oil of origanum six drachms; solution of sub-carbonate of ammonia, three ounces. Dissolve the soap, previously cut into small pieces, in the rectified spirit of wine and water, by the heat of a water bath, in a vessel well stopped. Dissolve also the camphor and oils in a few ounces of the rectified spirit of wine; when the soap is completely dissolved, add the dissolved camphor and oils, and lastly the solution of sub-carbonate of ammonia. Let the whole be well mixed; and after the fæces have subsided let it be poured into proper bottles. If the star-like appearance in the opodeldoc be not desired, the solution of subcarbonate of ammonia must be omitted.

Steers's opodeldoc is a useful liniment for sprains, &c, being rubbed upon the part.

Stenciling. See PAPER-HANGING.

STETHOSCOPE, an instrument lately invented by M. LAENNEC, of Paris, for discovering the state of the lungs, &c., in various diseases. It consists of a cylinder of wood, a foot in length, and from 18 to 20 lines in diameter, pierced in the centre throughout its whole length by a tube three lines in diameter, having one of its extremities shaped like a funnel, and a piece of wood with a hole in the centre, fitting the funnel, (to be put in occasionally, in exploring the voice, and action of the heart,) so as to render it throughout a regular and simple tube. In using this instrument one end is to be applied to the part to be explored, and held to it firmly and steadily, whilst the ear of the examiner is applied to the other extremity. This instrument is spoken of as being likely to lead to important knowledge in the cure of diseases of the thorax.

Stereotype. See PRINTING.

Sterility. See BARRENNESS.

STERNUM, in anatomy, the breastbone. See BREAST.

Stewing. See BROTH and SOUP.

STICKLE-BACK, or *Gasterosteus*, a genus of fishes comprehending thirteen species, scattered through the seas of Europe, Asia, and Africa. The following are the chief: the *aculeatus*, or Three-spined stickle-back, has three spines on the back; three inches long; inhabits the fresh waters of Europe; appears sometimes in vast shoals; used chiefly for manure, or to fatten ducks and pigs. The *ductor*, or Pilot fish, has four dorsal spines; is the constant attendant on the shark, and always precedes it; inhabits the ocean. The *saltatrix*, or Skip-jack, has eight dorsal spines; resembles the perch; inhabits Carolina. The *spinachia*, or Fifteen-spined stickle-back, is from six to seven inches long; above olive brown, beneath silvery; said to follow a light; seldom eaten, but used chiefly as manure; inhabits the seas of Europe, but never found in rivers.

STIFFLE, the patella, or knee-pan, in a horse.

STIGMA, in botany, the top of the pistil, pubescent and moist, in order to detain and burst the pollen, or prolific powder. The stigma differs in number, figure, and structure; being simple, divided, acute, perforated, capilate, peltate, or bilamellate.

Still. See DISTILLATION.

Still-yard. See STEEL-YARD.

STIMULANTS, are medicines, or other substances, or mental qualities, which possess the power of exciting the animal energy. They are divided into *durable* and *diffusible* stimulants. The durable stimulants consist chiefly of food and our customary drink, air, exercise, society, &c. Diffusible stimulants are opium, ammonia, and numerous other medicines; electricity, extraordinary heat, ardent spirits, great mental excitement, &c. &c. On the proper application or abstraction of both these orders of stimulants does good health and the removal of diseases chiefly depend. See BRUNONIAN SYSTEM, EXCITEMENT, IRRITABILITY, &c.

Sting. See BEE and POISON.

Sting Ray. See RAY.

Stiptic. See STYPTIC.

STIPULE, in botany, a scale at the base of the nascent petioles or peduncles.

STIRRUP, a well-known iron frame hung to a saddle, by a strap of leather, for the rider to rest his foot on. To facilitate the mounting of the horse, the left stirrup is sometimes kept longer that the other; we consider this, however, a bad practice.

STITCHWORT, CHICKWEED, or *Stellaria*, a genus of plants comprising eighteen species, chiefly natives of Europe; seven found in the wet woods, wastes, pastures, or ditches of our own country; but of no importance.

Stoat. See OTTER.

STOCK, STOCK-GILLIFLOWER, JULY-FLOWER, or *Cheiranthus*, a genus of plants consisting of thirty-four species, scattered over Europe, Asia, and Africa; two or three indigenous to our own country. The following are most worthy of notice.

The *Annuus*, or Ten-weeks' stock, which blossoms in about ten weeks from the time of its appearing above the ground. It requires very little care or culture, and will grow in almost any soil or situation, except a very wet one.

The *Cheiri*, or Wall-flower; the single kinds of these species may be propagated by seeds; and, although a common flower, are extremely fragrant. The double kinds are propagated by slips, in the spring months.

The *Incanus*, or Hoary cheiranthus, or Common stock gilliflower of our gardens, is a native of Spain, and also readily propagated by seeds.

The two last are very hardy evergreen biennials, or perennials; but the first being an annual must be continued by seeds sown every year; and even the two last, from their propensity to degenerate, can only be preserved in full beauty by an annual supply. The seeds should be chosen from such flowers as have five, six, or more petals; or from such as grow near double flowers. When fine doubles of both the last kinds are obtained, they may be multiplied by slips. It is always advisable, however, to plant all flowers of the stock kind in pairs rather than singly, in order that the male or double-flowering plants may impregnate the single ones, by which fine double varieties are often obtained.

Stock-dove. See PIGEON.

STOCKING, that part of the clothing of the leg and foot which immediately covers and screens them from the cold. Stockings are made of various materials, silk, cotton, flax, and wool. Stockings, however, composed of the last article, and worn in cold and variable weather, more especially by the sedentary, and the valetudinarian, are by far the best, as being bad conductors of heat, and consequently keeping the feet much warmer than those made of any other material.

Stocks. See FUNDS.

STOMACH, or *Ventriculus*, in anatomy, a membranous receptacle situated under the left side of the diaphragm, its left side touching the spleen, and its right covered by the thin edge of the liver; its figure nearly resembles the pouch of a bag-pipe, its left end being most capacious. The upper side concave, and the lower convex. It has two orifices, both on its upper part; the left, through which the aliment passes into the stomach, is named *cardia;* and the right, through which it is conveyed out of the stomach into the duodenum, is named *pylorus*; where there is a circular valve which hinders the return of aliment from the gut, but does not, at all times, hinder the bile from flowing into the stomach.

The stomach, like the intestinal canal, is composed of three coats or membranes; it is also furnished with numerous nerves; lymphatics are also distributed throughout its whole substance, and proceed immediately to the thoracic duct.

The uses of the stomach are, to excite hunger, and, partly, thirst; to receive the food from the œsophagus, and to retain it till, by the motion of the stomach, the admixture of various fluids, and by many other changes, not exactly understood, it is rendered fit to pass the right orifice of the stomach, and afford chyle to the intestines for the nutrition of the body, &c. See CHYLE, CHYME, and DIGESTION.

The stomach is subject to various diseases: indeed, there are few general diseases in which the stomach is not more or less affected; and, therefore, in the treatment of general disease, it is essential that the state of the stomach should be carefully attended to. The most common complaint of the stomach, however, is that from which few persons do not, either permanently or occasionally, suffer, viz. indigestion, or dyspepsia; under which last term, as well as under ALIMENT, APPETITE, and HYPOCHONDRIASIS, we have laid down some practical directions, which, if attended to, cannot fail to be of great service.

Inflammation of the stomach is known by considerable fever, thirst, great heat, and pain in the region of the stomach, increased when any thing is taken into it; vomiting, hiccup, pulse hard and small, and prostration of strength. It is produced by acrid substances of various kinds, such as arsenic, corrosive sublimate, acids, and other poisons taken into the stomach; and in the case of arsenic, on its being applied to an external wound: it may be also produced by food of an improper nature; by taking large draughts of any cold liquor, when the body is much heated by exercise or dancing; and by repelled eruptions and gout. Besides these, it may arise from an inflammation of some of the neighbouring parts being communicated to the stomach.

Inflammation of the stomach is always a dangerous disease, and, therefore, the best medical advice should, without delay, be obtained. It very often terminates fatally, the patient being either suddenly destroyed by the violence of the inflammation, or else it terminates in suppuration, ulceration, or gangrene. If, however, the symptoms are very mild, and proper remedies have been employed at an early period of the disease, it may terminate in resolution, either in the course of the first, or at farthest the second week of the disease. In its termination by suppuration, cold shiverings, night sweats, and hectic fever arise, which at length prove fatal, unless the pus should be thrown up by vomiting, and the ulcer heals.

The treatment of persons who have taken poisons has been so amply detailed under AQUA FORTIS, CORROSIVE SUBLIMATE, the general head POISON, &c. &c., that no farther detail can here be necessary. We may, however, observe, that the cure of inflammation of the stomach, where no particular directions in our work are given for it, must be attempted by copious and repeated bleedings, employed at an early period of the disease, not regarding the smallness of the pulse, as it usually becomes softer and fuller after the operation; several leeches should also be applied to the region of the stomach, followed by fomentations, or the hot bath; after which a large blister will be proper. The large intestines may be evacuated by a laxative clyster; but scarcely any internal medicine can be borne by the stomach till the violence of the disease is much abated: magnesia, or other mild cathartic, to clear the canal effectually, may then be given. When suppuration occurs, all irritation must be avoided, and the strength must be supported by a mild farinaceous diet, and giving opium occasionally to relieve pain.

When foreign substances have been, by accident, swallowed, such as nails, stones, pieces of bones, coins, knives, &c., the best remedies will be those of a fat, oily, and mucilaginous nature, such as spermaceti, milk, butter-milk, olive-oil, &c. Some persons have recommended purging with castor-oil; we, however, strongly doubt the propriety of purgatives. On this subject, what is said under GLASS, ŒSOPHAGUS, and PINS, is deserving of serious attention.

STOMACH, OF THE HORSE, *Inflammation of.* The stomach of the horse sometimes becomes inflamed in consequence of poisons or improper medicines being given. Bleeding, as in other inflammations, is, of course, in this disease, an essential remedy. And the same remedies, but in much larger doses, must be given for obviating the effects of poisons in horses as mentioned under POISON, CORROSIVE SUBLIMATE, &c. &c., depending, of course, upon the kind of poison which has been swallowed. Inflammation of the stomach of the horse is, however, a rare disease.

Oxen and *Sheep* are liable to a distension of the stomach, or paunch, from improper feeding. See BLOWN.

STOMACHICS, in medicine, those substances which excite and strengthen the action of the stomach. Most stimulants, given in proper doses, and upon proper occasions, are stomachics.

STOMATEUS, a genus of fishes consisting of three species, as follow: the *fiatola*, having the body barred with great beauty; it has two stomachs, and inhabits the Mediterranean and Red seas. The *para* has the back of a gold colour, belly silvery; body slender, scaled; flesh white, tender, delicious; inhabits South America and Tranquebar. The *cumara*, has the back blue, belly white; about a span long; inhabits the fresh waters of Chili.

STOMOXYS, a genus of dipterous insects, comprising sixteen species, chiefly natives of Europe, a few of America, and one or two of Barbary; three common to our own country. They are sub-divided into,—sheath convolute, and geniculate at the base, with two bristles,—sheath covering the mouth, with five bristles. They all suck the blood from other animals. The following are the chief: the *calcitrans*, inhabiting Europe, and resembling the common fly; it is the insect which buzzes about the legs of cattle, making them continually stamp with the feet; they also sting our own legs in autumn. The *irritans* and the *rostrata* are, like the preceding, inhabitants of Europe, and resemble the common fly, and are very troublesome to the backs of cattle.

STONE, in mineralogy, a substance more or less hard, consisting of various kinds of earths, united with acids, &c. &c. See ALABASTER, GYPSUM, LIME, MARBLE, ROCK, &c. &c.

The following table, formed from *experiments on the lateral strength of stones*, has been published by Mr. TREDGOLD, in the *Philosophical Magazine*, for October, 1820.

Kind of Stone.	Distance between the supports.	Breadth of the piece. *Inches*	Depth of the piece. *Inches.*	Weight which broke the piece.	Weight of a cubic foot	Specific gravity.	Order of hardness.	Absorbed of water.
Dundee stone....	14 In.	1·45	1·5	411lbs.	163·8lbs.	2·621	4	$\frac{1}{511}$
Craigleith stone...	14	1·55	1·55	137	147·6	2·362	5	$\frac{1}{63}$
Hailes stone	14	1·55	1·5	123	134·8	....	5	
White statuary marble.........	14	1·075	1·075	130	......	2·706	3	$\frac{1}{1300}$
Long-annet stone	9	1·525	1·15	160	136·25	2·212	5	$\frac{1}{26\cdot7}$
Portland stone	12	2·07	1·55	270	132	2·113	2	$\frac{1}{16}$
Bath stone	5·5	1·0	1·0	58	123·4	1·975	1	$\frac{1}{13}$

Mr. Tredgold observes, that of late, stone stairs, balconies, landings, &c., are executed with a less and less quantity of material, and that there is no prospect of a stop being put to this species of mis-placed economy, till some dreadful accident happens. In the formation of stairs, balconies, &c., they should be calculated to bear the greatest possible load with safety. The above table prescribes the necessary data, as far as regards the strength of the stone. The Dundee stone is the best which Mr. T. tried.

STONE, a certain quantity or weight of some commodities. A stone of beef, in London, is eight pounds; in Herefordshire twelve pounds; in the North sixteen pounds. A stone of wool, according to the statute of 11 Hen. VII., is to weigh fourteen pounds; it however varies: in Gloucestershire it is fifteen pounds; and in Herefordshire *twelve pounds. A stone among horse-coursers is fourteen pounds.* These discrepancies strongly prove the great necessity of some legislative enactment for the regulation of weights as well as measures. See BUSHEL.

STONE, or *calculus*, a disease nearly allied to gravel. By gravel we understand those small sand-like concretions, or stones, which pass from the kidneys through the ureters; and by *stone* a calculous concretion in the kidneys, or bladder, of too large a size to pass without great difficulty. Discharges of small gravel do not, usually, terminate in the stone; many have experienced them during a long life without any more serious inconvenience; while the stone is a disease affecting, chiefly, the young, and depending on circumstances not easily explained. When the stone attacks persons more advanced in life, it is often the consequence of a long protracted paroxysm of gout, terminating imperfectly. It is, however, a complaint to which both sexes and all ages are liable; but females appear to be less subject to it than males.

It will be convenient to treat of this disease under two heads. We shall first speak of the *calculus, or stone of the kidneys.*

The calculi formed in the kidneys, and voided without remaining any considerable time in the urinary passages, are either *uric*, *oxalic*, or *cystic*, the phosphates never forming small kidney calculi. Uric calculi, when immediately voided from the kidney, are of a yellowish or reddish brown colour, somewhat hard, soluble in caustic potash, and exhale the smell of burned horn before the blow-pipe. The oxalic calculi vary considerably in appearance; they are generally of a greyish brown colour; sometimes they have a polished surface, and resemble hemp-seed; they are insoluble in dilute muriatic acid; and are reduced under the blow-pipe to mere lime. The cystic calculi are yellowish, have a crystallized appearance, are soluble in dilute muriatic acid, and in diluted solution of potash. When *heated in the flame of a spirit-lamp, or a blow-pipe, they exhale a peculiar* fetid smell. The first kind are the most common, the second occur occasionally, the last kind are rare.

The symptoms of calculi in the kidneys are of very different shades of violence; sometimes, indeed, so trifling, that little is suspected till the stone is voided; and dissections after death have often proved that stones may remain in the kidneys during life, without producing any sensible affection of the urinary organs. But acute pain almost always attends the passage of a calculus along the ureter, and when this is followed by the expulsion of small grains of red sand in the urine, the nature of the disease is sufficiently distinguishable from mere inflammation. It is also often accompanied with a sense of weight in the region of the kidneys, and, generally, a numbness of the thigh of the same side, and of very variable duration. This is succeeded by a period of ease, which lasts till symptoms of stone in the bladder come on, or till the calculus enters the urethra. Among the most usual symptoms may be also mentioned the discharge of a large quantity of mucus, often streaked with blood, and sometimes of a purulent appearance. A considerable hæmorrhage not unfrequently attends the passage of a stone into the bladder.

At this period every means should be resorted to which tend to the expulsion of the stone; for the longer it remains in the bladder the less likelihood will there be of getting rid of it. Large quantities of aqueous drinks, and other mild diuretics, should be administered; purgatives are also greatly beneficial; for this purpose, the sulphate of magnesia, dissolved in a large quantity of warm water, or the same salt with infusion and tincture of senna, may be taken.

Plain food, moderate exercise, abstinence from fermented liquors, and, in most cases, the liberal use of aqueous drinks, will be found necessary in this complaint. All experience shows, that whatever deranges the stomach and *bowels, and the other organs concerned* in digestion, more especially the liver, produces corresponding mischief in all these calculous cases ; hence the beneficial effects of mild aperients, tonics, bitters, &c., and the great advantage of *moderate* horse exercise, when not forbidden by the irritation of the kidneys.

Opiates, the warm bath, frictions upon the loins by external irritants, always excepting cantharides, and suppositories, or injections of opium, have frequently a good effect. Henbane is also often a useful medicine, operating as a diuretic narcotic, without producing costiveness.

As the chief calculi discharged from the kidneys are of the *uric* kind, besides the regimen, &c. mentioned above, those means must be adopted which we have directed for *red sand*, under our article GRAVEL, to which, therefore, we refer. The patient should, however, only pursue the alcaline system, till the desired effect of removing the excess of uric acid has been attained.

For the particular treatment of oxalic and cystic calculi, as they are of rare occurrence, no general plan can be laid down. In the latter kind it is probable that mild acids may be of service.

Calculus, or *stone in the bladder.* When once a stone has acquired a moderate size, it usually occasions the following symptoms : frequent inclination to make water, excessive pain in voiding it, drop by drop, and sometimes a sudden stoppage of it if discharged in a stream ; after making water great torture in the glans penis, which lasts one, two, or three minutes ; and, in most constitutions, the violent straining makes the rectum contract and expel its excrements ; or, if it be empty, occasions a tenesmus, which is sometimes accompanied with a prolapsus ani. The urine is often tinctured with blood, and sometimes pure blood itself is discharged. It is, however, generally, of a limpid colour ; at other times is thick, and deposits a mucous sediment. If the stone be large there is a constant dull pain about the neck of the bladder, and frequent *desire of going to stool.*

All these symptoms are increased by exercise, especially by riding on horseback. From long continuance of pain, the patient's health becomes ultimately impaired, and unless effectual means be employed for removing the disorder, it very often proves fatal.

It is now pretty generally admitted that, when a stone has once lodged in the bladder, and increased there to such a size as to be no longer capable of passing the urethra, it cannot be dissolved in the living body by any means at present known ; and although it may possibly become so loosened in texture as to be voided piece meal, and gradually crumble away, the chances are so much against the event that it is scarcely to be ranked among probable occurrences. In the treatment, therefore, of calculus of the bladder, where a surgical operation is either inexpedient or will not be submitted to, our attempts must be directed to the palliation of present symptoms, and to the prevention of the increase of the size of the stone. For the mitigation of urgent symptoms, opiates, the warm bath, &c., will be frequently necessary ; so will also an attention to diet and regimen, as mentioned above. It may be also some consolation to many persons to be informed, that the peculiarities in the water of different places have not, as far as their effects are known, any influence in producing calculus disorders.

For obviating some of the symptoms attendant on *suppression of urine*, in this complaint, our article URINE may be consulted.

The chemical constituents of urinary calculi have been alluded to under our article gravel, and in the preceding part of this article ; they are *uric acid*, *ammonia*, *magnesian phosphate*, *phosphate of lime*, *oxalate of lime*, and *cystic oxide.* The most common cause of stone in the bladder is, the lodgment of a small uric calculus from the kidneys ; and from an inspection of collections of calculi, it appears that, in by far the greater number of cases, a nucleus of uric acid is enveloped in a crust of the phosphates. Our endeavours must, therefore, be directed towards reducing the excess of uric acid in the urine to its natural standard; and to diminish, as far as may be, the tendency to the deposition of the phosphates; and as two very different methods are required to obtain this end (See GRAVEL,) the impropriety of applying one mode of treatment to all calculous cases is evident.

If, upon examination, it be found that the urine abounds in uric acid; and if, as is frequently the case, red sand is voided, magnesia and the alcalis may be resorted to; but they should not be persevered in beyond what is necessary to arrest the progress of the uric secretion; or, if combined as preventives, they should be exhibited in small doses. Magnesia, in such cases, is more useful than any other alcaline medicine. If the phosphates predominate, and if white sand be voided, the acids may be resorted to; but, in consequence of the more irritable state of the parts, it becomes more than ever necessary to use them with circumspection. It ought to be known that, in general, the white sand voided by patients suffering from stone in the bladder, is *produced* by the *too free use of alcalies*; and which has not only done considerable mischief, but induced an erroneous belief that it was the effect of the medicine upon the stone itself.

Besides the calculi composed of uric acid and the phosphates, those composed of oxalate of lime, and cystic oxide, may be mentioned. The first, which are of kidney origin, when concreting into calculi in the bladder, are peculiar, being externally rough and tuberculated, and of a deep reddish brown, whence they have been called *mulberry calculi.* The cystic calculus is rare; it is usually a pale fawn colour. But of the mode of discovering such calculi in the living subject, or preventing their increase, nothing is with certainty known.

The idea of *dissolving* the stone in the bladder by the internal use of the caustic alcalis, is almost too absurd to merit serious refutation; it is not possible that they should reach the bladder in a caustic state, in which state only they dissolve the uric acid; and if they could arrive there, the mischief done to the urinary passage must render their use dangerous and impracticable. Nor is that of attempting the *solution* of a stone in the bladder by the injection of acid and alcaline solutions less futile. It may be, however, useful to observe, that, independent of the ordinary disposition of the urine in its healthy state, to deposit the phosphates, upon any extraneous matter in the passage, it often acquires a greatly increased tendency to do so, in consequence of general disease, or local injury. Particular states of the stomach and bowels, or of the general health, favour the formation of phosphates; local injury of the spine produces an alcaline urine; and when, from any causes, such as stricture, or diseased prostate gland, or calculus, the bladder does not quite empty itself, the remaining portion of urine is very apt to undergo a slight decomposition, in which case, more or less of the phosphates will be thrown down. In the cure of, or alleviation of this disease, attention to all or to some of these circumstances will be frequently necessary, and promises the most beneficial results.

We cannot conclude this article without confessing our deep obligations to the valuable papers of Mr. BRANDE, on *Calculous Disorders*, in the Journal of the Royal Institution; and without also observing, that, although we trust, and believe, what we have said on so painful a malady as the stone will be found useful; yet, that the best and most early medical advice will be the safest and most satisfactory course. The *operation* is, of course, the province only of the experienced surgeon.

STONES, in THE BLADDER of Horses, are very rarely found; they are sometimes met with in the ureters, and sometimes in that part of the intestines named cœcum, or blind gut. The disease is rarely, if ever, discovered till after death.

Stone from the clouds. See Meteoric Stone.

Stone chat. See Warbler.

Stone-crop. See Sedum.

STORAX, or *Styrax*, a genus of plants comprehending four species, of which two are cultivated for the warm resins which exude from them. They are as follow:

The *officinale*, or Official storax-tree, a native of Europe and the Levant, and flowering in July. It rises about fifteen feet high, and has a grey bark. The leaves are bright green above, beneath hoary: flowers white, in terminal clusters; fruit a juiceless drupe. From this tree the gum, or rather resin, called Storax, is obtained in Asiatic Turkey; it issues from incisions made in the bark. Three kinds of storax are met with in the shops: storax in the tear, which is pure storax, and very scarce: storax in powdery lumps, which is, in fact, nothing but a small portion of the genuine storax mixed with saw-dust, and liquid or strained storax, which is too often a mixture of storax, tolu, and benzoin, and generally prepared in this country. Alcohol dissolves storax completely; but when it is mixed with other resins, soluble also in the same liquid, the adulteration is with difficultydetected. It contains a considerable portion of benzoic acid, and is esteemed stimulant and expectorant; but, except as an ingredient in the compound tincture of benzoin, it is rarely used. It is, however, of an agreeable scent, imparting the smell of *jessamine* to spirit of wine; and is, we believe, used for preparing that essence.

The *benzoin*, or Gum benjamin-tree. is a native of Sumatra. See Benzoin.

Stork. See Crane.

Stoughton's Elixir. See Gentian.

STOVE, an apparatus contrived for the purpose of consuming fuel, so as to produce heat for warming rooms, &c. &c. The term stove is, however, very indefinite, and, like many other terms in domestic economy and the arts, is applied to various contrivances of very different shape, purposes, and uses: a stove sometimes implies a small closet kept to a certain degree of heat, for the purpose of drying some prepared articles, such as sugar, &c. &c.

It is impossible that we can enumerate the various forms of stoves employed, even in warming of sitting rooms. But the greatest modern improvements in the application of heat, whether to rooms, or other domestic purposes, is that by means of *steam*, which will, no doubt, in numerous instances, supercede many of the stoves now in use, both from economical motives as well as from its superior cleanliness. For farther observations relative to the stove, heating rooms, &c. &c. See Boiler, Chimney, Fire-place, Furnace, Oven, and Steam.

STRAINS, or Sprains, in *Horses*, occur very often, and in very different parts. They are, most commonly, produced either by excessive exercise, falls, or by the animal being forced to pull beyond its strength; or by heavy burthens, &c.

Rest is the grand remedy for strains, and, without it, all others will prove ineffectual. Turning a horse to grass is not, in general, so useful as confining him to the stable; as, when he is in the field, he will be too apt to take too much exercise. A flannel bandage, kept constantly wet with the following lotion, is a good application to recent strains;—as it cannot be moistened during the night, it is better to leave it off, and apply it again as early as possible in the morning;—the dry bandage is injurious. Take of sulphate of zinc four ounces; of acetate of lead, six ounces; of water three quarts; of vinegar one quart. Mix them. In severe strains, it is advisable to bleed and give some opening medicine.

In *strains of the legs*, if any swelling remain *after* the inflammation has subsided, blistering, or firing, will be then necessary.

In *strains of the shoulder*, after rest, bleeding and opening medicines, a rowel in the chest will be advisable; and the whole of the shoulder should be well rubbed with the following embrocation three times a day: Take of liniment of soap four fluidounces; of liquor of ammonia one ounce. Mix them.

For a *strain of the back*, apply the above embrocation and place a fresh sheep-skin on the loins with the flesh side next the skin; and also give a purge.

For a *strain of the stifle*, a blister is the best remedy.

Strain of the coffin joint, requires perfect rest, and blistering of the pasterns.

Stramonium. See THORN-APPLE.

STRANGLES, a disease incident to young horses, attacking them generally during the fourth and fifth year. It consists in a swelling under the jaws, attended with cough, dulness of the eyes, and some degree of fever; soon after a discharge from the nostrils usually takes place, the swelling increases, becomes tender, and at length suppurates. The abscess, if not opened, bursts, the horse is relieved, and gradually recovers. This is the usual progress of the disease, and which, when mild, requires no medical attention; but it sometimes assumes a more severe form, the swelling and inflammation being great, and threatening suffocation. In such case, the parts should be fomented with cloths dipped in warm water, or a poultice may be applied to the part. When the swelling has burst, or is opened, it should be dressed with green basilicon. A blister to the throat, in great difficulty of swallowing, will sometimes be of service, applied before the fomentation. A mild dose of physic, on the horse's recovery, will be proper.

STRANGURY, a difficulty of making water, while the efforts to discharge it are attended with pain. A *dysury*, is when the patient feels an inexpressible difficulty in making water. And an *ischury* consists in its total suppression. What we have to observe on all these heads, will be most appropriate under URINE, to which, therefore, we refer.

Strangury in Horses. See SUPPRESSION of URINE.

STRAW, the stalk on which corn, and several kinds of pulse grow, and from which they are separated by threshing.

The uses of straw are almost innumerable. They may be, however, referred to *feeding stock, for litter, thatching*, and *miscellaneous purposes.* Formerly straw was almost solely applied by the farmer to the purpose of feeding cattle; but although the plan of feeding stock solely upon straw cannot be approved, yet neither is the opposite extreme, that of expending the whole straw, even that of pulse, *in litter*, deserving of approbation. A moderate quantity of straw given to cattle with turnips, or other succulent food, contributes much to their health; and the straw of pulse, when properly harvested, with an adequate proportion of corn, may be given with great advantage to working horses, and may save more expensive articles. *Wheat* straw is frequently cut into chaff, see CHAFF-CUTTER, and given to horses advantageously with their corn: the chaff is likewise mixed with other food, in particular with potatoes, and given to feeding and working cattle. Oat straw should be given uncut. When *barley-straw* is well harvested, it is much relished by stock. *Bean straw*, if well harvested, forms a very hearty and nutricious kind of food for working horses and cattle in the winter season; a mixture of peas' straw improves it: but bean straw is not calculated so well for carriage or saddle-horses. *White peas' straw*, if cut green, and dried quickly, is fodder of a superior quality; horses will thrive nearly as well on it as on hay; it is also excellent food for sheep.

Tare haum, when cut green, and dried into hay, is of the highest quality; it should be mown as soon as the blossoms begin to fall off, or the pods to form.

When straw is given to stock, it should be constantly made use of as soon after it is threshed as possible: for if exposed to the atmosphere, it becomes either musty or too dry. If it is, however, kept long afterwards, it should be bound in trusses, and never suffered to remain loose.

There is, undoubtedly, much nourishment in the heads of grain in general, and particularly in the aums of barley; these last should either be steeped in cold water, or have boiling water poured upon them before they are given to stock.

It is a useful practice to mix a portion of straw, particularly the straw of oats, with the aftermath of grass, or second crop of clover, at the time of stacking it, by which the straw acquires juices, and a flavour agreeable to cattle.

In the consumption of straw as fodder, the inferior should be first made use of, and afterwards those of a better kind. It is necessary, also, that cattle, when fed on straw, should have an abundant supply of water.

Straw, as *litter*, not only keeps the animals warm, dry, and comfortable, but, by the same means, the straw becomes mixed with dung and urine, and is converted into a rich manure. All the various sorts of straw answer the purposes of litter.

The use of straw for *thatching* houses is now very generally exploded, in consequence of the risk of fire, and the sooner its use is entirely superseded for such purposes the better.

The chief miscellaneous uses of straw are for covering hay and corn-stacks; for making paper; for bottoming chairs; for beds for the lower classes; for packing glass, china, earthenware, and various other goods. The straw of grain, and wheat in particular, is used in the manufacture of hats, bonnets, trinkets and various ornaments, by which numbers are usefully and advantageously employed.

Straw-cutter. See CHAFF-CUTTER.

STRAWBERRY, or ***Fragaria***, a genus of plants comprehending seven species; two of America, one somewhat shrubby, the rest natives of Europe. The *vesca*, or Common strawberry, and the *sterilis*, barren of fruit, are common to our own country. The common strawberry is the only species cultivated for use; its varieties amount to many hundreds. The following are the chief:

The *Sylvestris*, or Red wood-strawberry, a native of this country; found in woods and dry banks.

The *Virginiana*, or Virginian scarlet strawberry, is a native of Virginia. It is the earliest sort, and the best for forcing.

The *Moschatta*, Hautboy, or Musky strawberry, a native also of America.

The *Chiloensis*, Chili, or Caroline strawberry, is a native of Chili.

The *Alpina*, Alpine, or Monthly strawberry, is a native of Germany.

The mode of cultivation of all the species and varieties does not essentially differ. They are usually propagated by young plants which run out and take root from the parent stock.

Some strawberry plants have both male and female flowers on the same plant, but these, it is said, are not so profitable; and some late experiments seem to prove that it is more advantageous to raise the plants from seeds than runners; the fruit, when quite ripe, should be sown in a rich moist soil; in one year the alpines produce fruit; the other kinds require two. About one male plant to ten female plants, is said to be the most profitable proportion. This mode of cultivating the strawberry is a late suggestion. See PHILLIPS's *Pomarium Britannicum.*

The strawberry may be transplanted either in September, October, November, or February. The three first-mentioned months are the best; for if the spring be dry, the February plantation will require great attention and much watering. The proper soil is a light loam, and not peculiarly rich. The beds should not be more than four feet wide. The wood may be planted eight inches; the scarlet should be a foot; the hautboy sixteen inches; and the

Chili strawberry twenty-two inches distant from plant to plant.

In the spring, when the strawberries begin to flower, if the season be dry, they must be plentifully watered and kept cleared from weeds. At Michaelmas all the beds should be dressed, all the strings or runners taken from the roots, the weak plants which stand too close pulled up, and a little fine earth should be thrown about the plants, which will greatly strengthen the roots. These beds will not continue in perfection more than three or four years, when fresh ones should be made.

Strawberries are an agreeable, and when eaten in moderate quantity, a wholesome summer fruit.

STRAWBERRY-TREE, or *Arbutus*, a genus of plants comprehending ten species, scattered over the globe. The following are the chief: the *unedo*, or Common strawberry-tree, is an evergreen, found in Italy, Spain, and on the banks of the lake of Kilarney, in Ireland; it is very common in our gardens; four varieties:—the oblong-fruited,—the round-fruited,—the red-flowered,—and the double-flowered. The fruit is indifferent. They are propagated by layers or cuttings, or by seed. The *alpina*, Mountain strawberry-tree, or Black-berried arbutus, thrives on the dry mountains, and in the western Isles of Scotland.

The *Uva ursi*, Bearberry, or Trailing arbutus, is a native of the North of Europe, and also of the heathy mountains of Scotland, flowering in June. The leaves are not unlike those of the myrtle. They have been recommended in calculous complaints, and ulcerations of the urinary organs; in menorrhagia, diabetes, and other fluxes, and also in pulmonary consumption; but they are of doubtful efficacy. The dose of the powdered leaves is from one scruple to a drachm, given two or three times a day

STRELITZIA, a genus of plants comprehending two species, natives of the Cape, one of which, the *reginæ*, or Canna-leaved strelitzia, is a very magnificent plant, and cultivated in our hot-houses. The leaves are radical, oblong, very entire, with parallel ribs; the petals are yellow, and four inches long. It is only raised by seeds brought from the Cape.

STRENGTH, in physiology, the same as force.

M. Peron, the naturalist, has, it is said, demonstrated, that men in a savage state are inferior in strength to men civilized; and that the improvement of social order does not, as some have pretended, diminish our physical powers. The following are the results of some experiments, with the dynamometer of M. Regnier.

		Force with hands.	With traces.
Savages.	Of Dieman's Land	50,6	0,0
	— New Holland	51,8	14.8
	— Timor	58,7	16,2
Europeans.	French	69,2	22,1
	English	71,4	23,8

This is ingenious; but till we know on what classes of *civilized* society these experiments on Europeans were made, we can come to no satisfactory conclusion on this subject. The present habits and manners of Englishmen, more especially in our crowded towns, tend, unquestionably, to debility, and, consequently, to a diminution of physical strength. *Moderate* exercise in agricultural occupations, does, most probably, contribute to the increase of our physical strength; and hence is, upon the whole, the most beneficial to the health and well-being of man.

STRICTURE, in medicine, a contraction, or closure of some canal or hollow organ of the body.

STRINGHALT, in farriery, consists in a lameness, which is evinced when the horse first goes off by lifting his hind legs unusually high, or rather suddenly, as if the muscles were affected with spasm. It proceeds generally from some strain or blow. Fomentations and good rubbing are sometimes of service; the last refuge is a blister, or firing the parts.

STROBILE, in botany, a pericarp, formed from an ament by the hardening of the scales. Hops consist of strobiles.

STROMBUS, a genus of testaceous, univalve, spiral worms, consisting of fifty-three species, thus subdivided . lip projecting into linear divisions, or claws, —lobed, —dilated, — tapering with a very long spire. The following are the chief: the *pes pelicani*, or Cormorant's foot, and the only species of this genus found on our own coasts; two inches long; inhabits the European and American seas; the *chiragra*, has the shell large, brown varied with white; very rare and valuable; inhabits the Indian ocean; the *gallus*, has the shell uniformly brown, yellow, or violet, sometimes varied with spots and rays.

STRONTIA, a genus of ponderous earths, consisting of strontium combined with acid. It is traced abundantly in different parts of the world. Two species have been described, the *carbonata*, or Carbonate of strontium, first found in the lead mine of Strontian, in Argyleshire, in granite rocks, accompanied by galena and witherite, generally in amorphous masses, or in a state of crystallization; colour whitish green; has some lustre and a little transparency. The *sulphata*, or Sulphate of strontium; three varieties; one found near Paris, of a bluish grey colour, without lustre; specific gravity 3,6; it consists of sulphate of strontium, carbonate of lime, and oxide of iron. Another is fibrous; and the third foliated; both are found in Britain, and the latter also in Sicily. A variety of sulphate of strontium is called, from its blue tint, *celestine*.

STRONTIUM, one of the new metals which is obtained from the earth of strontia, by the same process as barium, which metal it resembles in appearance, as well as in many other respects.

The essential distinctions, however, are that baryta and all its salts, except the sulphate, are poisonous; the corresponding strontitic salts are innocent. Baryta tinges flame yellow; strontia red: strontia has less attraction for acids than baryta; hence the strontitic salts are decomposed by baryta. Pure baryta is ten times more soluble in water than pure strontia. See BARYTES.

STROPHULUS, a papulous eruption, peculiar to infants, and exhibiting a variety of forms, which are called ***red-gum***, ***white-gum***, ***tooth-rash***, &c. See INFANCY and TEETHING.

Struma. See SCROFULA.

Strychnos. See NUX VOMICA.

STUCCO, in masonry, a lapidifying cement, composed of lime, sand, grit, gypsum, puzzolano, or similar materials, mixed into a paste or plaster, with lime or other water, and often, where greater durability is required, combined with metallic oxides and the caseous part of milk.

The following has been strongly recommended as a cheap and durable stucco, by Mr. WAY, of Bridport: Take one part of chalk lime, three parts of fine sand collected on the sea-shore near Bridport harbour, both finely sifted and mixed up with a sufficient quantity of lime-water. When used, the first coat should be laid on half the thickness of a crown piece; let it remain two days, then, with a painter's brush, wash it over with strong lime water, and lay on the second coat of the same thickness. See Transactions of the Society of Arts, for 1811.

Colours may be given to stucco by various substances. A solution of sulphate of copper in water, mixed with the last coating, will impart an elegant green when lime enters into the composition of stucco. Care must, however, be taken, that *copper*, and not iron trowels, be used in laying on and smoothing it, as iron decomposes and spoils the colour.

Where the cement is required harder than such compositions as the stucco just mentioned, or when wanted to resist water, it should be combined with a portion of some metallic oxide, as of iron or lead, which gives it a firmness equal to that of free stone; puzzolano is one of the best kind for this purpose. When a powerful cement is wanted, equal parts of puzzolano and Aberthaw lime is commonly used. But for general purposes, two bushels of Aberthaw lime, one bushel of puzzolano, and three bushels of clean sand, mixed with a proper quantity of water, will make

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STRINGHALT, in farriery, consists in a lameness, which is evinced when the horse first goes off by lifting his hind legs unusually high, or rather suddenly, as if the muscles were affected with spasm. It proceeds generally from some strain or blow. Fomentations and good rubbing are sometimes of service; the last refuge is a blister, or firing the parts.

STROBILE, in botany, a pericarp, formed from an ament by the hardening of the scales. Hops consist of strobiles.

STROMBUS, a genus of testaceous, univalve, spiral worms, consisting of fifty-three species, thus subdivided lip projecting into linear divisions, or claws, —lobed, —dilated, — tapering with a very long spire. The following are the chief: the *pes pelicani*, or Cormorant's foot, and the only species of this genus found on our own coasts; two inches long; inhabits the European and American seas; the *chiragra*, has the shell large, brown varied with white; very rare and valuable; inhabits the Indian ocean; the *gallus*, has the shell uniformly brown, yellow, or violet, sometimes varied with spots and rays.

STRONTIA, a genus of ponderous earths, consisting of strontium combined with acid. It is traced abundantly in different parts of the world. Two species have been described, the *carbonata*, or Carbonate of strontium, first found in the lead mine of Strontian, in Argyleshire, in granite rocks, accompanied by galena and witherite, generally in amorphous masses, or in a state of crystallization; colour whitish green; has some lustre and a little transparency. The *sulphata*, or Sulphate of strontium; three varieties; one found near Paris, of a bluish grey colour, without lustre; specific gravity 3,6; it consists of sulphate of strontium, carbonate of lime, and oxide of iron. Another is fibrous; and the third foliated; both are found in Britain, and the latter also in Sicily. A variety of sulphate of strontium is called, from its blue tint, *celestine*.

STRONTIUM, one of the new metals which is obtained from the earth of strontia, by the same process as barium, which metal it resembles in appearance, as well as in many other respects.

The essential distinctions, however, are that baryta and all its salts, except the sulphate, are poisonous; the corresponding strontitic salts are innocent. Baryta tinges flame yellow; strontia red: strontia has less attraction for acids than baryta; hence the strontitic salts are decomposed by baryta. Pure baryta is ten times more soluble in water than pure strontia See BARYTES.

STROPHULUS, a papulous eruption, peculiar to infants, and exhibiting a variety of forms, which are called ***red-gum***, ***white-gum***, ***tooth-rash***, &c. See INFANCY and TEETHING.

Struma. See SCROFULA.

Strychnos. See NUX VOMICA.

STUCCO, in masonry, a lapidifying cement, composed of lime, sand, grit, gypsum, puzzolano, or similar materials, mixed into a paste or plaster, with lime or other water, and often, where greater durability is required, combined with metallic oxides and the caseous part of milk.

The following has been strongly recommended as a cheap and durable stucco, by Mr. WAY, of Bridport: Take one part of chalk lime, three parts of fine sand collected on the sea-shore near Bridport harbour, both finely sifted and mixed up with a sufficient quantity of lime-water. When used, the first coat should be laid on half the thickness of a crown piece; let it remain two days, then, with a painter's brush, wash it over with strong lime water, and lay on the second coat of the same thickness. See Transactions of the Society of Arts, for 1811.

Colours may be given to stucco by various substances. A solution of sulphate of copper in water, mixed with the last coating, will impart an elegant green when lime enters into the composition of stucco. Care must, however, be taken, that *copper*, and not iron trowels, be used in laying on and smoothing it, as iron decomposes and spoils the colour.

Where the cement is required harder than such compositions as the stucco just mentioned, or when wanted to resist water, it should be combined with a portion of some metallic oxide, as of iron or lead, which gives it a firmness equal to that of free stone; puzzolano is one of the best kind for this purpose. When a powerful cement is wanted, equal parts of puzzolano and Aberthaw lime is commonly used. But for general purposes, two bushels of Aberthaw lime, one bushel of puzzolano, and three bushels of clean sand, mixed with a proper quantity of water, will make an excellent cement for locks and basins for canals.

The scales detached from the hammering of red hot iron, and easily procurable at blacksmith's forges, when pounded, sifted, and incorporated with lime, produce a cement equal to puzzolano; roasted iron ore and lime have been also found to answer the same purpose. One part iron filings, and three parts sand, moistened with water, will also form a durable cement.

It is said that an excellent *preservative* stucco may be made thus: quick lime 56 parts; calcined gypsum 24 parts; white lead 20 parts; to which must be added one-fourth of the weight of the whole dry powder of cheese fresh from the press. The lime must be slacked in as little water as possible, but enough to make it pass through a sieve not very fine, in order to separate the parts which will not slack. This must be triturated with the cheese to the consistence of a soft, smooth, and coherent paste. To this are to be added the calcined gypsum, and the white lead, which must not be adulterated with chalk. By further grinding on a stone, with a little water, the whole is to be reduced to a pap, rather thicker than fluid. Lastly, it is to be diluted with common water the moment of using it, which is to be done with a painter's or varnisher's brush. The addition of a little ochre, or red oxide of iron, will give it such a tint as may be wished, without altering its properties. See COLOUR-MAKING, LIME, MORTAR, PLASTER OF PARIS, &c.

STURGEON, or *Acipenser*, a genus of fishes comprehending five species. They are characterized by an obtuse head, mouth beneath, retractile, without teeth; between the end of the snout and the mouth four cirri, body elongated, angulate with numerous rows of large bony plates. The sturgeon may be ranked among the largest fishes, is an inhabitant of the sea, but ascends rivers annually. Its flesh throughout all the species is delicious; from the roe is made caviare. See CAVIARE. And from the sound and muscular parts isinglass. It feeds on worms and other fishes. The female is larger than the male. The species are as follow:

The *Sturio*, Common, or Grey roughed skinned sturgeon, has a long slender body, shielded by a quintuple series of tubercles; length sometimes twenty feet; weighs sometimes 400lbs. or more; head large, sloping, and covered with bony plates; mouth without teeth; colour above cinereous, with dusky variations, beneath whitish or yellowish; inhabits the Northern, European, and American seas, migrating during the early summer months, into the large rivers and lakes, and returning to the sea again in Autumn; it is oviparous; and taken occasionally on the coast of this country; flesh delicate.

The *Schypa*, or Small sturgeon, has a blunt snout; length about five feet; found in the Caspian sea; it is doubtful whether this be a distinct species, or a variety of the preceding.

The *Huso*, or Isinglass sturgeon, is larger than the common sturgeon, measuring sometimes twenty-five feet in length; colour dusky or blackish blue, above; silvery on the sides and abdomen, with a tinge of rose on the latter; found in the Northern, Caspian, and Mediterranean seas. From the sound, or air bladder, of this species, the well-known isinglass is prepared, an ample account of preparing which is detailed in the Philosophical Transactions, Vol. 63. The skin, stomach, and intestines of this species, are also used for the same purpose. See ISINGLASS.

The *Ruthenus*, or Sterlet, is the smallest of the species; length rarely exceeding three feet; found in the Caspian sea, the Volga, &c.

The *Stellatus*, or Stellated sturgeon, is from four to five feet long; general colour dusky above, beneath white; head roughened with stellated marks and tubercles; found in the Caspian sea.

STYE, or STYTHE, a small, but painful swelling and inflammation of the eyelid. Bathing the part, often, with warm milk and water, or, in troublesome cases, a poultice of bread and milk, is the best remedy.

STYLE, in botany, the middle portion of the pistil, connecting the stigma with the germ. It is called, by some English botanists, the shaft.

Style, in *Chronology*. See CALENDAR.

STYLE, in the Belles Lettres, the manner in which our thoughts are expressed either in writing or speaking.

Although minute attention to this subject, particularly in the common intercourse of life, borders on pedantry, yet a habit of expressing ourselves, both in writing and speaking, with clearness, correctness, and propriety, ought to be sought by every one. This habit would not be difficult to acquire, were we always anxious to express what we mean plainly and simply, rather than to clothe our meaning in expressions, and in a style remote from the common apprehension of mankind. It is a mistake to suppose that eloquence consists in unusual modes of speech, and words of Grecian or Roman origin. The best eloquence is the most simple; and he who desires to make any effectual impression upon mankind, will find an unaffected and simple style, both in writing and speaking, also the best.

STYLEPHORUS, a genus of fishes consisting of one species only, the *Chordatus*, having its snout connected to the back part of the head by a brown flexible leathery duplicature, which permits it to be extended so that the mouth points upwards, or to pull back so as to be received into a sort of case formed by the upper part of the head; eyes close to each other; body gradually diminishing as it approaches the tail, which terminates in a process or long string, ending in a very fine point; inhabits the West Indian seas; whole length about thirty-two inches, of which the process at the end of the tail measures twenty-two; colour of the body rich silvery.

STYPTICS, a term applied to those substances which possess the power of stopping hæmorrhages; alum, catechu, spirit of wine, &c. &c. are styptics.

One of the most successful styptics is said to be the following. Take of liquor of ammonia one part; water three parts. Mix them. This fluid applied to a fresh wound effectually checks the flowing of blood both from large and small wounds.

In *horses* the only effectual methods of stopping bleeding are — tying the wound or divided artery both above and below the wound,—pressure,— or a hot iron.

Styrax. See STORAX.

Sublimate. See CORROSIVE SUBLIMATE.

SUBLIMATION, in chemistry, a process by which certain parts of bodies are separated from the impure or less volatile parts. It is similar to distillation; hence liquids are said to be *distilled*, and solid bodies *sublimed*. Sublimation is conducted in vessels of different kinds and shapes; in glass and iron retorts, a mattrass, tall vial, &c.

SUBSULTUS TENDINUM, convulsive motions, or twitchings of the tendons, mostly of the hands, which take place in many diseases: their presence indicates more or less danger.

Succinic acid. See AMBER.

SUCCORY, or *Cichorium*, a genus of plants consisting of five species, scattered over the globe, of which the following are chiefly deserving notice:

The *Intybus*, or Wild succory, is a native perennial, the leaves of which abound in a milky juice, of a penetrating, bitter taste: indeed, every other part of the plant, root, seeds, and flowers, was formerly used medicinally, but modern medicine takes little notice of it.

The *Endivia*, or Endive, is either annual or biennial, a native of India, and now common to almost every culinary garden. If the seed be sown early in the spring, the plant commonly arrives at perfection and produces seeds during the summer, and then perishes in August. But if the seed be not sown till June or July, the plant will grow to its full size in the autumn; but the seed-stalks will not shoot up till the ensuing spring; and consequently it may be preserved in this mode, in a state of perfection, through the whole winter.

Endive forms an occasional variety of

salad, but is of little importance medicinally.

SUCKER, or *Cyclopterus*, a genus of fishes comprehending ten species, having a short, thick body, without scales; ventral fins united into an oval concavity forming an instrument of adhesion. These fishes inhabit the sea, feed on worms, insects, and the fry of other fishes; they adhere so firmly to rocks, by means of the ventral fins, as scarcely to be removed by a force less than sufficient to destroy them. The chief are the *lumpus*, or Lump-sucker, about two feet long, with a body thick, broad, variable in colours, generally black, cinereous at the sides, beneath orange; several varieties. Inhabits the Northern seas, one or two varieties the Indian and American seas, one the coast of North Wales. The *gelatinosus*, or Jelly-sucker, has a naked, subdiaphanous, gelatinous body; a foot and a half long; body slender, when caught, trembles like a piece of jelly, and so rank as to be abhorred even by dogs; inhabits the eastern coast of Kamschatka. The *liparis*, or Unctuous sucker, has the body from five to eight inches long; body mucous like a snail, nearly transparent, and soon melts away, flesh mucous and oily.

SUCKING-FISH, or *Echineis*, a genus of fishes consisting of three species, of which the *remora*, having a forked tail, large mouth, from twelve to eighteen inches long, inhabiting the Mediterranian and Pacific seas, and adhering so firmly to the sides of vessels, and the larger fishes by its head, that it is removed with great difficulty, is the chief; flesh not eaten.

Suckling. See BREAST, INFANCY, MILK, &c.

SUDORIFICS, those medicines which promote perspiration: diaphoretics.

Suet. See FAT, and MUTTON.

Suffocation. See CHARCOAL, and POISONS.

SUGAR, or *Saccharum*, the general basis of sweetness in all vegetable substances. When pure, it is perfectly transparent; and if crystallized, colourless; but when granular, of a pure glossy white, soluble in water and alcohol, without smell, and with the taste of simple sweetness, totally void of flavour.

It is occasionally obtained from various vegetables, but more commonly from beet-root and the maple. See BEET, MAPLE, and WHEAT SUGAR; the sugar of commerce is, however, obtained from the *saccharum*, or Sugar-cane, a genus of plants consisting of eleven species, natives of the East and West Indies; one of Europe: the chief is the

Common SUGAR-CANE, or *Saccharum officinarum*, having flat leaves and panicled flowers; it has a jointed reed-root, from which ascend four or more shoots, proportionable to the age and strength of the root, eight or ten feet high, according to the goodness of the ground; in some moist rich soils, the cane has measured nearly twenty feet; but these are seldom so productive as those of a more moderate height. Three varieties have been described, the *white sugar-cane*, with a long white culm, knots distant; the *red sugar-cane*, with a thicker short red culm, knots approximate; the *elephantine sugar-cane*, long, red, knots very thick. This species is a native of both the Indies, and of the islands of the South Sea.

This plant may be increased by slips, or suckers from the root, and by cuttings from the main stalk; in our greenhouses, it is usually cultivated by slips from the bottom, or by side shoots from the stem near the root; these may be taken off at any season in which they appear fit for the purpose, some fibres being detached along with them; they should then be planted separately in pots of rich earth, and plunged into a bark-bed, and be watered, and occasionally shaded, till they have taken root; they are afterwards to be treated as other green-house plants.

In its natural climate, the cane usually grows to perfection in about fourteen months; it is planted by cuttings in parallel furrows; the cuttings being laid level and even, and covered over with earth. When ripe, the reeds are cut off at a joint near the root, cleared of the leaves, tied up in bundles, and sent to the mills.

The canes being cut in short pieces, are compressed and squeezed in the mill, which consists of upright cylinders, till all their juice is obtained from them. It is then evaporated with the addition of a small quantity of lime until it becomes thick, when it is transferred into wooden coolers, where a portion concretes into a crystallized mass, which is drained and exported to this country under the name of *muscovado*, or *raw sugar*. The remaining liquid portion is called *molasses*, or *treacle*; which, in the West Indies, with other refuse saccharine matter, is commonly converted into rum. See Rum.

Sugar is *refined* in this country. The raw sugar chosen for refining, is distinguished by the sharpn[illegible] and brightness of the grain; those kinds are preferred which have a peculiar grey hue. Soft-grained yellow sugars, although originally white, are not so fit for this purpose; and hence, East Indian and Barbadoes sugars are never used by the refiner.

The process of *refining sugar* consists in separating the dark saccharine matter, or molasses, from the white and pure sugar. The *pans*, which are similar to those used in the West Indies, are charged with a certain portion of lime-water, with which bullock's blood is well mixed by agitation. They are then filled with sugar, which is suffered to stand a night to dissolve. In the morning fires are lighted, and when the liquid begins to boil, the albumen of the blood coagulates, and, rising to the top, brings all the impurities of the sugar with it. These are taken off with a skimmer; and the liquid is kept gently simmering, and continually skimmed, till a small quantity, taken in a metallic spoon, appears perfectly transparent; this generally takes from four to five hours. It is then drawn off into a cistern; the pans are reduced to half their size, by taking off their fronts; a small quantity is returned into each; the fires are increased, and the sugar made to boil as rapidly as possible, till a small quantity, taken on the thumb, is capable of being drawn into threads by the fore finger. Nothing, however, but practice can determine the exact point at which the boiling should be stopped; when it is ascertained the fire is instantly damped and the boiling sugar carried off in basins to the coolers, when it is violently agitated with wooden oars, till it becomes thick and granulated, and a portion being taken on the finger, it is no longer capable of being drawn into threads. Upon this agitation in the cooler, the whiteness and fineness of the grain of refined sugar greatly depend. It is then poured into conical earthen moulds, previously soaked in water, and again agitated with sticks. When sufficiently cold, the paper stops being removed from their points, they are set with the broad ends upward, in earthen pots, when the first portion of liquid molasses runs down, leaving the sugar much whitened; afterwards pipe-clay mixed with water, to the consistence of thick cream, is put upon the loaves to the thickness of about an inch; the water leaving the pipe-clay, descends through the sugar washing out all the remains of the molasses, and colouring matter. This process of *claying* is repeated four or five times. The loaves are afterwards placed in a stove, heated to about 95° and thoroughly dried. The different drainings from the sugar, either form treacle, or *bastard* sugar. The produce of 1 cwt. of raw sugar has been thus estimated: refined sugar 63lbs; — bastard sugar 18lbs;—molasses 27lbs;—loss in weight, dirt, &c. 4lbs.——112.

Several patents have been from time to time obtained for refining sugar; three by Mr. Wilson, obtained in 1816, 1817, and 1818, have excited considerable public attention, in consequence of two extraordinary trials during the present year (1820) where the most able chemists gave very contradictory testimony, as to the degree of heat at which fixed oil becomes decomposed. See Oil.

Of the value of these patents, we cannot even now speak with decision; but refer our readers to the trials in the court of Common Pleas, *Severn, King,* and *Co.* versus the *Imperial Insurance Office,* April 1820. And *Severn, King,* and *Co.* versus the *Phœnix Insurance Company,* December, 1820.

Refined sugar readily absorbs moisture from the atmosphere; it is soluble in its own weight of water at 60°. Boiling water dissolves a much larger quantity. This solution is called *syrup*; (see SYRUP;) is vicid, and furnishes crystals in the form of four and six-sided prisms, irregularly terminated. See CANDY. Oils also readily combine with sugar; the mixture is miscible with water; lime and the fixed alkalies unite also with it. The concentrated strong acids dissolve and decompose it; the weaker simply dissolve it. The alkaline and earthy hydro-sulphurets, sulphurets, and phosphorets, decompose it and resolve it into a substance resembling gum. Its ultimate constituents are oxygen, 50·63; carbon 42·47, hydrogen 6·90. It is consequently a very combustible substance. It is converted into the *oxalic acid* by nitric acid, and hence the oxalic acid has been sometimes called *acid of sugar.* See OXALIC ACID.

The uses of sugar as food and for making wines, ardent spirits, &c. are innumerable. See BREWING, CIDER, and WINES. It contains much nutrition; but from its liability to go into the vinous fermentation when mixed with liquids, and at a moderate temperature, it should be sparingly eaten by the dyspeptic; there is also reason for believing that large quantities of sugar are very prejudicial to the teeth, at least in certain habits, — those of the scorbutic and scrofulous kind.

Molasses, or treacle, is too well known to need description. Its chief difference from sugar appears to be in its mucilaginons or gummy colouring matter; it is more laxative than refined sugar.

Sugar can scarcely be considered as a medicine, although it is used largely in *syrups,* &c. as a vehicle. As an antidote to some metallic poisons it is, however, important. See ARSENIC, and POISON.

Sugar, on importation into this country, is liable to heavy duties; and refined sugar to bounties on exportation.

Sugar-maple. See MAPLE.

SUICIDE, self-murder; it is also a term applied to the person committing such unnatural deed.

It is remarkable, but nevertheless true, that suicide is more commonly committed in the most *civilized* nations; and that in such nations it more frequently occurs among the wealthy and informed than amongst the lower and indigent classes of society. Many attempts have been made to explain this fact; but unless it be that the mind is rendered more sensitive, and its surface, so to speak, increased, by which it becomes more liable to impressions of all kinds, we confess that we cannot account for it. That, however, many of the suicides in polished society arise from disappointed pride, or over zealous expectations, there can, we think, be no question; the best antidote for these is moderation in our desires; and above all, moderation in every thing present or expectant, which the world can by possibility or probability afford. Suicide is often a sequel of insanity. See DESPAIR, FELO-DE-SE, HOPE, and INSANITY.

SUKOTYRO, a genus of mammalian quadrupeds consisting of one species only, the *Indicus,* or Indian suckotyro, with an upright, short, narrow mane, reaching from the top of the head to the rump; snout like a hog's, truncate; ears long, rough; tail thick, bushy; eyes placed upright in the head; hoofs four; skin smooth, without plaits; horns like teeth, not quite so thick as the tusks of an elephant; size of a large ox; a thick clumsy animal, that feeds upon herbage; seldom taken; a native of Java.

SULPHATE, or *Sulphas,* a term

applied to the combination of the sulphuric acid with various bases. See SULPHUR.

Sulphate of Copper, see BLUE VITRIOL.
———— *Lime*, see GYPSUM and LIME.
———— *Magnesia*, see EPSOM SALT.
———— *Potash*, see POTASH.
———— *Soda*, see GLAUBER'S SALT.
———— *Zinc*, see ZINC.

Sulphate of Iron, Green vitriol, or Green copperas, is thus ordered to be prepared by the London College: Take of iron and sulphuric acid of each eight ounces; of water four pints. Mix the sulphuric acid with the water in a glass vessel, and to these add the iron; then, when the effervescence is over, filter the solution through paper, and evaporate it over the fire, so that crystals may form as it cools. Pour off the water and dry the crystals upon bibulous paper.

Sulphate of iron has a strong styptic taste; it crystallizes in transparent rhomboidal prisms, of a fine green colour, which redden the vegetable blues. When exposed to the air, the crystals become opaque, and are covered with a yellow powder. Exposed to heat, the water of crystallization is driven off, and it becomes a whitish green powder. If the heat be further urged, the acid is driven off, and the remainder is a red oxide, which is the colcothar of vitriol, or purple-brown of commerce.

This salt is, however, obtained, in commerce in the large way, from native sulphurets of iron, by exposing them to the air and moistening them till a crust of sulphate of iron is formed on their surface, which is afterwards obtained in crystals, by solution and evaporation. Considerable quantities of these sulphurets are obtained on the eastern shores of this country. This salt is prepared in the large way from those at Deptford. The uses of sulphate of iron are various: chiefly, however, as a dyeing material. See DYEING, and INK. It is decomposed by earths, alkalies, and their carbonates, &c.

As a medicine, sulphate of iron is tonic emmenagogue, and anthelmintic. It has also been used dissolved in water, as a lotion to cancerous and phagedenic ulcers. See IRON.

SULPHITE, a term applied to the combination of the sulphurous acid with some base. See SULPHUR.

SULPHUR, or BRIMSTONE, a britle combustible substance of a pale yellow colour, insipid and inodorous, but exhaling, when heated, a peculiar smell, and yielding, when kindled, copious suffocating acid fumes. When held firmly in the hand, a crackling noise is heard in it, supposed to be electric. Its specific gravity is 1·99. It is principally a mineral product, and occurs crystallized, its primitive form being a very acute octoëdron, with an oblique base.

Massive sulphur is chiefly brought to this country from Sicily and Naples; it is found native, associated with sulphate of lime, sulphate of strontium, and carbonate of lime. Its colour is various shades of yellow, and the transparent crystals are doubly refractive; it is not uncommon among volcanic products.

Roll sulphur is chiefly obtained from sulphuret of copper (see COPPER,) in this country; which is roasted, and the fumes received into a long chamber of brick-work, where the sulphur is gradually deposited; it is then purified by fusion, and cast into sticks. It is, however, also made by simply melting the crude sulphur, as it is brought from Sicily. But as roll sulphur is a very impure sulphur, sometimes containing arsenic, it should not be used in any nice experiments, nor in medicine.

Flowers of sulphur are made by melting the crude sulphur in an iron pot, which is connected by a tube with a large room or kiln. The flowers are sublimed by the heat, and driven through the tube, into the kiln, at the bottom of which they descend; and when the apparatus is quite cooled they are collected, in the large way, usually once a week, and are then fit for sale; unless they should happen to contract, during their sublimation, an *acid* taste, in which case they should be washed in water, which, dissolving the acid, leaves them fit for use. Flowers of sulphur may, however, be sublimed in a common retort. But this method is rarely resorted to in consequence of their being so easily obtained in the shops.

When sulphur is heated to about 180°, it volatilizes, and its peculiar odour is strong and disagreeable; at 225 it liquefies; between 350 and 400 it becomes viscid and of a deep brown colour; at about 600 it quickly sublime.

Sulphur and Oxygen combine in two proportions, giving rise to the compounds *sulphurous, and sulphuric* acid. The first is a gaseous body, which may be procured by directly burning sulphur in oxygen gas, or indirectly by boiling mercury in sulphuric acid. This must be collected and preserved over mercury: for water takes up rather more than 30 times its bulk of this gas, forming the liquid sulphurous acid, which, when recently prepared, has a sulphurous astringent taste, and destroys many vegetable colours; but, by keeping, it acquires a sour flavour, and reddens the generality of vegetable blues. This acid gas combines with the alkalies, &c., and forms sulphites. It has a suffocating nauseous odour, an astringent taste, extinguishes flame, and kills animals. Neither it nor its combinations are of much importance compared with the sulphuric acid and its combinations. See SULPHURIC ACID.

Sulphur combines with many of the metals, as well as some other bodies, forming what are called *sulphurets.* The native sulphurets are very numerous. It also combines with potash when fused with it, forming *sulphuret of potash,* or, as it was formerly called from its colour, *liver of sulphur.* Its taste is bitter and acrid; it is very deliquescent, and very soluble in water. It is occasionally given medicinally; but its efficacy is doubtful. In large doses it is poisonous. See POISON.

Sulphur is used for various purposes in the arts; for the manufacture of gunpowder; for the obtaining of sulphuric acid, &c. &c. Many of its preparations are also used medicinally.

Flowers of sulphur, or *sublimed sulphur,* has been long known and used as a common purge; externally applied, some being taken internally at the same time, it is esteemed a specific in the itch. See ITCH and INFANCY. From its gentleness of operation it is one of the best means of keeping the bowels lax in hæmorrhoidal affections; the diaphoresis, which it at the same time excites, renders it useful in chronic rheumatism, atonic gout, asthma, and other pulmonary affections, not attended with acute inflammation. It manifestly transpires through the skin. The dose may be from one drachm to three, mixed into an electuary, with syrup or treacle, or in milk.

Precipitated sulphur, or *Milk of sulphur,* does not differ, in its qualities, from washed flowers of sulphur. It is given, of course, in the same doses, and in the same way.

It should be known that when flowers of sulphur taste *acid* they are improper for internal use. Violent vomiting and purging have been sometimes the consequence of large doses of acid flowers of sulphur being taken: the propriety of their being *washed,* or at least *tasted,* to ascertain whether they be acid or not, is obvious. When, however, such unpleasant consequences are produced, calcined magnesia may be given; one ounce may be mixed in a pint of water; two ounces of which may be taken every half hour; but no vomiting should be excited by any means. Or chalk and water may be given. When there is reason to believe all the offensive matter is expelled, linseed tea, or gum Arabic and water, barley-water, or other mucilaginous drinks should be administered.

Sulphur is occasionally employed in domestic economy for bleaching wool, silks, straw-bonnets, &c. It may, for such purposes, be used thus: Place some lighted charcoal in a chaffing-dish, in a small close room without a chimney, or in a large closet or box; strew an ounce or two of powdered brimstone on the hot coals; hang up the article in the room, close the door, and let it remain for three hours, or all night.

SULPHUR VIVUM, a greyish sulphureous mass, which is, in this country, usually obtained, we believe, from the makers of gunpowder. It appears to be the excrementitious parts of crude sulphur, and in qualities similar to that important body. Sulphur vivum is used occasionally, by the vulgar, in ointments for the itch; but it is not certainly superior to sulphur; and, from the possibility of its containing improper matter, it should not be used for such purposes.

Sulphur wort. See SAXIFRAGE, the MEADOW.

SULPHURET, in chemistry and mineralogy, a combination of sulphur, with an alkaline, earthy, or metallic base.

Sulphurets are, in some cases, formed by heating the base with sulphur; in others by decomposing the sulphates; and in others by the action of sulphuretted hydrogen. They are in general brittle, and without lustre; some are soluble, others are insoluble in water. Sulphurets are found also in great abundance in nature. See ANTIMONY, COPPER, LEAD, QUICKSILVER, &c.

Sulphuret of Arsenic. See REALGAR.

SULPHURETTED HYDROGEN, a gaseous compound, consisting of sulphur and hydrogen. It may be obtained by presenting sulphur to nascent hydrogen, which is the case when sulphuret of iron is acted upon by dilute sulphuric acid. This gas may be collected over water, though by agitation that fluid absorbs thrice its bulk. It has a fetid odour. Its specific gravity to hydrogen is as 16 to 1. It is inflammable, and during its slow combustion sulphur is deposited, and water and sulphurous acid formed. It extinguishes flame; it is very deleterious, and, when respired, proves fatal, although largely diluted with atmospheric air. It exists in some mineral waters.

Equal volumes of this gas and ammonia readily unite, and produce the *Hydrosulphuret of ammonia.* See HYDROSULPHURET.

SULPHURIC ACID, or *Acidum sulphuricum*, commonly but improperly called OIL OF VITRIOL, in consequence of its being formerly obtained by the distillation of green vitriol, is now made in this country by burning a mixture of 8 parts of sulphur and 1 of nitre, in close leaden chambers, containing water, by which the acid fumes produced are absorbed; and by evaporating the water in suitable boilers, to a certain strength, and afterwards distilling over, either in glass or platinum retorts, the more aqueous and impure parts, the acid is obtained in the state in which it is found in commerce. It is a combination of sulphur and oxygen.

Sulphuric acid, as it is usually met with, is a transparent, colourless fluid, having the appearance only of oil; its specific gravity is 1,85; it boils at 620°, and freezes at 15°. It is very acrid and caustic; and, when diluted with water, produces a very sour liquid. It rapidly absorbs water from the atmosphere, and, upon sudden mixture with water, produces much heat. It is largely consumed in a variety of manufactures. It is used by the makers of nitric, muriatic, citric, and tartaric acids; by bleachers, dyers, tin-plate makers, brass-founders, and gilders. For these purposes it is generally sufficiently pure as it comes from the wholesale manufacturer; but as traces of lead, lime, and potassa, are usually found in it, it often requires to be purified by distillation for the finer operations of chemistry.

This acid combines and forms substances of more or less importance, with various metals, earths, alkalis, &c. &c. See SULPHATE. It also combines with alcohol, and forms æther. See ÆTHER and SPIRIT. It also, from its superior affinity for most bodies, decomposes various combinations of most of the acids, with different bases.

As a medicine it is a valuable tonic,

astringent, and antiseptic; but it is only given in a *diluted* state under the name of

Diluted Sulphuric acid, which is made thus: Take of sulphuric acid one fluidounce and a half; distilled water fourteen fluidounces and a half. Add the acid gradually to the water, and mix. This diluted acid is given with advantage in typhous fevers, dyspeptic affections, diabetes, cutaneous eruptions; and to restrain the colliquative sweats which attend hectics; it is also a useful addition to gargles in sore throat, and to check salivation. In the first-mentioned cases it may be combined with infusions of the Peruvian bark, other vegetable bitters, and aromatics; in the latter with infusion of roses, mucilage, or syrup. The usual dose is from ten to thirty drops. In malignant erysipelas, with a tendency to hæmorrhage, it has been given, in the quantity of a fluidounce, in divided doses, in twenty-four hours; and it has also been given advantageously to the same extent in uterine hæmorrhages.

A diluted sulphuric acid is sold in the shops, much stronger than the above, for various domestic purposes, under the name of *Spirits of Vitriol.*

For the treatment of persons who have swallowed this acid by mistake, or as a poison, see AQUA FORTIS and POISON.

Sulphurous Acid. See SULPHUR.

SULTAN FLOWER, SWEET-SULTAN, or *Centaurea moschata*, an annual plant of our gardens, a native of the Levant: the flowers are purple, white, or flesh-colour: a variety with fistular, and another with fringed flowers. They are propagated by being sown in a hot-bed in the spring; in May they may be transplanted where they are to remain; if sown in a warm border in autumn, they will live through the winter, and blossom early the next year.

SUMACH, or *Rhus*, a genus consisting of thirty-four species, scattered over the globe, but chiefly Cape plants. They may be sub-divided into, leaves pinnate,—leaflets three together,—leaves simple. The following are cultivated:

The *Coriaria*, or Elm-leaved sumach, has a strong, woody stem, eight or ten feet high; bark hairy, brown while young; leaves pinnate; leaflets elliptic; flowers whitish; a native of the south of Europe. The branches are used instead of oak-bark for tanning leather; Turkey leather, it is said, is uniformly tanned with this shrub; the leaves and seeds are styptic. It is singular that this is the only species of the genus *rhus* which is perfectly innocent, the others being active poisons. See POISON. Sumach is used for dyeing various grey, drab, and slate colours, and also for yellow. See DYEING.

The *Typhinum*, Stag's horn, or Virginian Sumach, has pinnate leaves, leaflets lanceolate; the young branches resembling a young stag's horn in colour and texture; flowers a beautiful purple; a native of Virginia. Vinegar is sometimes made from the germs of the fruit, and its ripe berries afford an acid which may be a substitute for the citric. It affords, like the last, good dyeing materials; the juice is a good varnish; the dried leaves a tobacco.

The *Glabrum*, or Scarlet sumach, is less lofty than the last; a native of North America. The *elegans*, or Carolina sumach, has bright red flowers; a native of South Carolina. The *copallinum*, or Lentiscus-leaved sumach, has yellowish flowers: a native of North America. The *cotinus*, or Venice sumach, has flowers in purplish bunches; a native of the Appenines. The root and leaves are used for dyeing, the bark for tanning Spanish leather.

The *Toxicodendron*, Trailing poison oak, or sumach, has slender, but woody branches; bark brown; leaves ternate; leaflets petioled, angular, pubescent; stem rooting; flowers diœcous; a native of North America.

The *Vernix*, or Varnish sumach, has a straight trunk; leaves pinnate; a native of the swamps of North America. This shrub yields, by incision, a juice employed in the Japan varnish; it is also extremely poisonous.

The *Radicans*, or Rooting poison oak, sometimes called creeping ivy, is poisonous like the preceding, but in a less degree; the juice used as ink, makes indelible marks on linen; a native of North America. The *tomentosum*, or Woolly-leaved sumach; the *angustifolium*, or Narrow-leaved sumach; and the *lucidum*, or Shining sumach, are natives of the Cape.

The first nine may be raised by seeds or layers, some by suckers, or by their rooting branches. The seeds should be obtained from abroad; the seventh and ninth may be propagated by their trailing branches which have rooted in the ground.

Summer Fallow. See FALLOW.

SUN, or SOL, in astronomy, the brilliant luminary which enlightens the world, and by its presence constitutes day; and it is also the centre of what is called the *solar system*, all the planets revolving, in different periods, round it.

The sun appears to be the centre of light and heat, and to be essential to the well-being of most of the animals and plants upon this globe. In what light and heat consists is not exactly known. Some philosophers have supposed that heat, light, electricity, and magnetism, are only modifications of the same substance or action; whilst others are disposed to consider all these as MOTION, and nothing else. Certain it is that the rays of the sun produce little heat on elevated parts of the earth's surface; and from this it would appear that heat is the *effect* of the rays of the sun when combining or acting upon terrestrial matter.

The sun revolves upon its axis in 25 days and 15 hours. The direction of its motion is from west to east. All the rotation of the different bodies which compose the solar system, as far as they have been ascertained, are in the same direction, and likewise all their revolutions, excepting those of some of the comets, and those of some of the satellites of the planet Herschel.

Besides this motion of the sun round its axis, it has, in all probability, either a progressive motion, or a very slow one, round some amazingly remote centre of force.

The mean distance of the earth from the sun is 95,000,000 of miles. Its axis is computed to be 883,210 English miles; and its circumference is about 2,774,692 miles. From the similarity of the sun to the other globes of the solar system, there is every reason for concluding that it is inhabited by beings, whose organs are adapted to the peculiar circumstances of that vast globe! Every analogy regarding heat prevents us from concluding it, as some have supposed, a vast body of fire; it only affording the matter, which, on combining with suitable substances, evolves heat.

Sun-beam. See COLOUR, LIGHT, RADIANT MATTER, and RAINBOW.

SUN-DEW, or *Drosera*, a genus of plants comprehending eleven species, chiefly Cape or Indian plants; three common to the bogs and ditches of our own country; of these, the *rotundifolia*, Sun-dew, red-rot, or youth-wort, is most known. Its orbicular radical leaves, which resemble a cup, are fringed with hair, and secrete a limpid fluid which has all the appearance of a dew-drop, and which is so constantly supplied, that it is never dried during the hottest day. The whole plant is extremely acrid, the juice corrodes the skin, whence, mixed with milk, it is often used as a cosmetic. It is said that the presence of this plant is a useful guide in digging for turf.

SUN-FISH, or *Tetrodon*, a genus of fishes comprehending fourteen species, distinguished by bony jaws, divided at the end; aperture of the gills linear; body muricate beneath; without ventral fin; they are scattered through the waters of the globe; two common to our own coasts. The following are examples.

The *Sceleratus* is quadrangular, head very large; from two to two and a half feet long; flesh poisonous; inhabits the American and Pacific seas. The *lineatus*, or Lineated tetrodon, body with longitudinous brown and pale stripes; square, without scales, but prickly on the back; if handled when just taken out of the water, its prickles sting the skin, producing pustules like the nettle; grows to a vast size; inhabits the Nile. The *electricus*, or Electric tetrodon, is variously spotted with red, green, and white; seven inches long; gives an electric shock when handled; inhabits St. John's Island, in holes of coral rocks. The *ocellatus*, or Ocellate tetrodon, has the body thick, spherical, above dusky green, beneath white; exceedingly poisonous. The *lævigatus*, Globe tetrodon, or Sun-fish; inhabits Europe and Carolina, and found on our own coasts. The *mola*, inhabits the European and Mediterranean seas, and is the Oblong sun-fish of our own coasts. Another variety, the Short sun-fish of our coasts. The Globe sun-fish is seldom a visitor of our shores; the length of its globular belly, when extended, is above a foot; its circumference, when in that state, above two. This power of inflating its belly, together with its numerous spines, seems to be intended as a defence. The Oblong, and the Short sun-fish, are also singular animals, and deserving the attention of the naturalist.

SUN-FLOWER, or *Helianthus*, a genus comprising twenty-one species, a few natives of the East Indies, the greater part indigenous to North or South America; some of them are perennial, some triennial, and some annual plants. The following are the chief:

The *Annuus*, or Annual sun-flower, is too well known to need description. Several varieties; a native of Mexico and Peru. The seeds afford excellent food for domestic poultry.

The *Multiflorus*, Perennial, or Everlasting sun-flower, well known also as an ornament in our gardens; a native of Virginia.

The *Tuberosus*, Tuberose-rooted sun-flower, or Jerusalem artichoke, a native of Brazil, does not ripen its seeds in this country. See ARTICHOKE.

The first species is propagated by seeds sown in the spring; the second by parting the roots; the Jerusalem artichoke in the same manner, as potatoes.

SUN-FLOWER, DWARF AMERICAN, or *Rudbechia*, a genus of plants comprising nine species, all American plants, five or six of which are cultivated, and afford ornament and variety in our gardens.

Sun-flower, the little. See CISTUS.

SUN-FLOWER, TICK-SEEDED, or *Coreopsis*, a genus of herbaceous perennial plants, natives of the East or West Indies, or South America; twenty-five species have been enumerated. They rise chiefly from three to six feet, producing clusters of yellow terminal flowers like sun-flowers, but not so large. They are easily propagated by root slips.

SUPERB LILY, or *Gloriosa*, a genus of plants consisting of two species: the *superba*, or Superb lily, an elegant plant, with leaves ending in a tendril, not unfrequently found in our greenhouses; a native of Malabar; the roots, and every part of the plant, are poisonous; and the *simplex*, or Simple gloriosa, a native of Senegal, with pointed leaves, a climbing stem, and blue flowers.

SUPERSTITION, a belief on insufficient evidence. It is most commonly applied to matters of religion.

SUPPER, the last meal of the day, at which the less food is taken into the stomach, the more beneficial to the repose of the night and to the general health.

Heavy and hot suppers of either animal or vegetable food, are not to be recommended; the best, however, of these is simple gruel. We are sorry to observe that the present habits and usages of society are at total variance with this doctrine and with health. The best periods for taking food are about nine o'clock in the morning, or BREAKFAST; one o'clock in the afternoon, or DINNER; five o'clock in the evening, or TEA; and nine o'clock at night, or SUPPER. If these periods were adopted, with a vigorous routine of exercise or employment, much of which should be in the open air, the chief part of the maladies under which refined society at present labours, would be unfelt and even unheard of. We can only, therefore, here merely refer to the various preceding articles relative to this subject in our work, and chiefly to APPETITE, BREAKFAST, DINNER, DYSPEPSIA, EXERCISE, LABOUR, and SLEEP.

SUPPOSITORY, a kind of clyster which is put into the rectum, there to remain and dissolve gradually.

Suppression of the menses. See MENSTRUATION.

Suppression of urine. See URINE.

SUPPURATION, that morbid action, by which pus is generated or deposited in inflammatory tumours. See PUS.

Sweating. See PERSPIRATION.

SURFEIT, or *Crapula*, the consequence of excess in eating or drinking, or of something improper in these articles. It consists in a heavy load, or oppression of the stomach, with nausea, sickness, impeded perspiration, and, at times, eruptions on the skin.

The treatment of this affection will depend, in a great measure, upon its cause. If it arise from fish, corrupted meat, or other unwholesome food, and there is reason to conclude that the improper aliment is not wholly evacuated from the stomach and intestines, an emetic, or laxative, or both, may be necessary; after which draughts of vegetable acids diluted with water, will be of service; a sparing use of food of every kind will also be necessary; doses of cold beef tea may also be found useful. In severe cases a medical practitioner should be consulted.

SURFEIT, in farriery, consists in an eruption of small pustules or scabs; it appears to arise from a diseased state of the stomach and bowels. A mild purgative should be first given; afterwards a powder daily, composed of one ounce of nitre, and one ounce of prepared antimony. In bad cases, ethiops mineral, or a small quantity of calomel, may be added.

SURGEON, a professional person, who cures diseases, chiefly external and local, and in which manual operation is essentially concerned.

The duties of a surgeon are equally important with those of a physician; and from the numerous accidents in which the surgeon is called upon to interfere and to assist, the utmost promptitude and skill in his profession is absolutely necessary. The art of surgery has been much improved during the last century. Nor is the present wanting in great names who do honour to the profession.

Surgery involves a knowledge of two distinct kinds of equal importance; one *anatomical*, the other *operative*, without which, no person can become a good surgeon. The only error in the education of the surgeons of the present time is, in its being confined to those branches of knowledge; whereas the most able surgeon ought to possess, also, the ***knowledge of the physician***, in order, upon every occasion, that the greatest advantage may be derived from his art. See APOTHECARY, and PHYSICIAN.

The surgeons were incorporated into a *Royal College of Surgeons of London* in 1800, of which all examined and approved persons are admitted members on paying certain fees.

Surveying. See ACRE.

Suspended animation. See CHARCOAL, DROWNING, and POISON.

SUSPENSION BY THE CORD, a state of asphyxia, produced by what is vulgarly termed hanging.

Persons, who are apparently dead from hanging, have the face greatly swoln, and of a dark red or purple colour; the eyes are commonly suffused with blood, enlarged and prominent; swallowing and breathing are also totally suspended.

When the unfortunate person is discovered, the cord must, of course, be instantly cut; the suspended body, being taken down in the gentlest manner, every ligature ought to be removed; the head should be supported in an erect posture, and turned towards the left side. In short, the same measures recommended for drowned persons, are also necessary here, with this addition, that opening the jugular veins, or applying cupping glasses to the neck, will tend considerably to facilitate the restoration to life. Except in persons who are very full of blood, the quantity taken needs seldom to exceed an ordinary tea-cup full. Electricity or galvanism may, by the skilful, be probably employed in certain stages of the recovery from this state with great advantage. See **Drowning, Galvanism**, and **Electricity.**

SUTURE, in surgery, a closure of a wound by sewing. Sutures are of two kinds: the *twisted* suture is made by bringing the divided parts nearly into contact, and a pin is introduced from the outside inwards, and carried out through the opposite side to the same distance from the edge that it entered on the former side; a firm waxed ligature is then to be passed round it, forming the figure 8, by which the wounded parts are drawn gently into contact. The *interrupted* suture consists in a number of stitches, the interruption being only the distance between the stitches.

In anatomy, the term suture is applied to the union of bones by means of dentiform margins, as in the bones of the cranium.

SWALLOW, or *Hirundo*, a genus of birds comprehending thirty-eight species, dispersed over the four quarters of the globe, a few of which forming the tribe of swifts, have the four toes all placed forwards; the rest three before and one behind. Of all the feathered tribes, that of the swallow is most upon the wing: flight appearing its natural and almost necessary attitude. In this state it feeds and bathes itself, and sometimes procreates and nourishes its young. The following are the chief species:

The *Rustica*, or Common swallow: front and chin chesnut; tail feathers, except the two middle ones, with a white spot; another variety with the body entirely white. Builds in chimneys; sometimes in the roofs of outhouses, &c., lays from four to six white eggs, speckled with red; six inches long; arrives in this country towards the latter end of April; leaves it in general, about the end of September; seen sometimes late in October; when it flies low, is said to presage a storm, in consequence of its food, flies, not ascending high in the atmosphere at such times.

The *Esculenta*, or Esculent swallow, is blackish, beneath whitish; all the tail feathers with a white spot: two and a quarter inches long; builds in caverns of rocks, and makes its nest of a gelatinous marine substance, in shape resembling an apple cut down the middle; these nests are found in great numbers together, and are by the native and luxurious Asiatics, made into broths, and otherwise cooked, and are esteemed one of the greatest dainties of the table. They are also occasionally used for glue. Inhabits China, and the islands of the Indian Ocean.

The *Urbica*, or Martin, is blueish black; beneath white; tail feathers without spots. Another variety, with quill and tail feathers tipt with white: five and a half inches long; builds under the eaves of houses; the outside of its nest like the common swallow's, formed of clay; eggs white; inhabits Europe, and North America.

The *Apu*, or Swift, is blackish, chin white; eight inches long; feet so small that it rises from the ground, and walks with difficulty; is mostly on the wing; and rests by clinging to some wall; makes a harsh disagreeable screaming; builds chiefly in steeples and other lofty edifices; retires from England either by migration or becoming torpid, (of which last the instances are very rare), early in autumn.

The *Rufa*, is shining black, beneath rufous, front whitish; affixes its nest to beams; the nest sometimes a foot and a half long; five and a half inches long; inhabits Cayenne. The *purpurea*, or Purple swallow, is entirely violet; female brown; inhabits Carolina and Virginia, where it is esteemed for its use as a warning to poultry of the approach of birds of prey, which it becomes by attacking them furiously. The *cayennensis*, or White-collared swift, is blackish violet; five and a quarter inches long; nest long, conic, chiefly of the down of dog's-bane, curiously woven together with a division in the middle; inhabits Cayenne.

It was formerly supposed that many of this tribe remained under ground, or in some secure retreat, during the winter months; the most correct opinion, however, seems to be, that they migrate to warmer climates. The European tribe, most probably, to the warm or southern summer regions of Africa.

SWALLOW-WORT, or *Asclepias*, a genus of plants consisting of forty-one species, some of which are shrubs, others herbaceous plants, tall, upright, and perennial, with a milky and very acrid juice, affecting many constitutions with the appearance of being poisoned. They are chiefly natives of the Cape or of the East or West Indies. They may be subdivided into,— opposite flat leaves,—leaves revolute at the margin, —leaves alternate. The *nivea*, of South America, with green corols and snowy nectaries, is the most beautiful. Many of the others, and especially the *vincetoxium*, a native perennial of our own country, were formerly in the materia medica, but are now expunged.

Swallowing of *bones, glass, pins, &c.* See GLASS, ŒSOPHAGUS, PINS, &c.

SWAN, or *Anas cygnus*, a name given to several species of the genus duck, or *anas*. See DUCK.

The tame swan is a large bird, and is frequently seen on the Thames, and as an ornament, floating on many of the waters of our noblemen and gentlemen, in different parts of the country. It is, next the bustard, the largest of the British birds, being upwards of five feet in length, and distinguished by its hissing noise. Its plumage is of an ash-colour till the second year, after which it becomes perfectly white. It attains sometimes to the age of 100 years; it is a powerful animal, having been known to overpower and severely beat young persons. The female lays six or eight eggs in the month of February, which she hatches in about six weeks. The flesh is said to be very wholesome; but at present, the young swan, or cygnet, only is eaten. Exclusive of ornament, the chief use of swans is to clear pieces of water from weeds; but they are generally reputed great destroyers of the young fry of fish. The swan feeds like the goose and is familar; it is extremely dangerous, however, to approach it during incubation, or whilst the brood is young.

The *Cygnoides*, from Guinea, commonly called the *swan-goose*, or Muscovy-goose, is a sort of middle species between the swan and goose. It is distinguished by an erect gait and screaming. It is now plentiful in this country, and is said to unite well with the common goose.

Swearing. See OATH.

Sweat. See PERSPIRATION.

SWEET-APPLE, CUSTARD APPLE, or *Annona*, a genus of plants consisting of twenty-five species, all natives of the East or West Indies, or America; a fleshy fruit is produced from most of them, and is palatable. The pulp of the *miloba* of Carolina is highly sweet and luscious.

Sweet bread. See PANCREAS.

Sweet briar. See BRIAR, THE SWEET, and ROSE.

Sweet flag. See FLAG, THE SWEET.

Sweet fern. See CICELY.

Sweet pea. See PEA, the CHICKLING.

Sweet sultan. See SULTAN.

Sweet william. See PINK.

Sweet willow. See CANDLE BERRY MYRTLE.

Swift. See SWALLOW.

SWIMMING, the act of moving in the water with ease and dexterity. The art of swimming should be learnt by every male subject who is not naturally incapacitated from performing it, as it is impossible to foresee what conjunctures and accidents may occur to render such art of the utmost importance to ourselves or to our fellow creatures.

Persons who are learning to swim, should *never go out of their depth*: for one of the greatest obstructions to the acquisition of the art is fear. The learner ought first to walk courageously into the water till the fluid reaches to his breast, when he must gently incline his belly towards the surface, the head and neck being erect, the breast pressing forward, the thorax being inflated, and the back bent. Next, the legs must be withdrawn from the bottom, while they are extended or stretched out; and the arms should be stricken forward, corresponding with the motion of the former. In truth, the motion of a frog in the water, is very near the motion which a person, learning to swim, should imitate.

Swimming *on the back* is not essentially different from the method just described; but, except for greater expedition, there is no necessity for using the arms at all; the progressive motion of the body being readily produced by the striking of the legs alone.

In *diving*, or plunging under water, the swimmer must close his hands together, and bending his head close to the breast, his feet must be exerted with force. When he wishes to re-ascend, he has nothing more to do than to relax all the muscles, become motionless, and he will soon rise to the surface with the head uppermost.

No bladders, corks, or other artificial means of supporting the body, are necessary for persons learning to swim; but they may be occasionally useful to those who are exceedingly timid.

As an exercise, swimming is both agreeable and healthy. But although we recommend the young beginner to walk gradually into the water, it should not be forgotten, that plunging in *head-foremost*, is always a preferable mode when our first fears of the water are overcome. See BATH and DROWNING; under which last head are some observations well-deserving the atten- of learners of the art of swimming.

SWINE, PIG, HOG, or *Sus*, a genus of quadrupeds comprehending six species, distinguished by having four upper convergent fore-teeth; lower (usually) six, prominent; upper tusks two, shorter; lower two standing out; snout prominent, truncate, moveable; feet mostly cloven. They dig in the earth with the snout, which is furnished at the end with a strong roundish cartilage; feed indifferently upon almost every thing, even the most filthy; wallow in the mire, and are extremely prolific. The species are as follow:

The *Scrofa*, Pig, or Hog, has the back bristly on the forepart; tail hairy, two varieties: tail hairy, ears short, roundish, being the wild hog;—tail hairy; ears long acute; being the common hog: which is again divided into two subvarieties: one with undivided hoofs; the other having the back nakedish, belly reaching almost to the ground.

White is the most general colour of the tame hog; but other colours are often intermixed in various proportions.

The wild boar of Europe, merely a variety of the same species, has under his bristles a covering of soft, short, curled hair; his ears are short, and somewhat rounded; he is of a dark brindled colour. The Siam hog is another variety, distinguished from these merely by the greater length of his tail. The wild boar is a nobler animal than our domestic hog; he is never formidable till roused or provoked; he is frequently an object of the chase; the wild sow is peaceful, except when her young are injured.

The hog is fit for breeding at about twelve months old; the sow is gravid about four months, bringing sometimes twenty young ones at a litter. They will live from fifteen to twenty-five, or even thirty years. The males are usually castrated when about six months old, or earlier. Their size and strength continue to improve till the fifth or sixth year. Almost every region of the globe, except very cold ones, possesses animals of this species, either in a tame or in a wild state. They are found throughout Europe, the British isles, Asia, Syria; in Barbary and the East Indian islands. They are not originally natives of America, but being introduced by European settlers, they have multiplied in the warmer climates to an astonishing degree. Vast droves of wild hogs inhabit the forests of South America, which appear to be merely the descendants of those originally introduced from Europe. It is also found in the islands of the South Sea, at Otaheite, &c.

The hog is, most certainly, an important animal to man. Although his flesh is not so nutritive as beef or mutton, yet it furnishes a considerable part of the food of many of the inhabitants of this, as well as other countries; whether eaten fresh or salted: its bacon and lard, (see **Lard**) need only be mentioned. The bristles obtained from its mane are converted into brushes, and are also of great use to the shoemaker; the skin is worked into coverings for pocket-books, saddles, and a multitude of other articles.

The principal kinds of hogs bred in this country are the *Berkshire*, the *Hampshire*, the *Shropshire*, the *Gloucestershire*, and the *Herefordshire* breed; these are all of the larger kind. The smaller breeds are the *Chinese*, and the *Swing-tailed breed*; another of the small kind is met with in many districts; it is of a whitish colour, thick, compact, and well-made, short in the leg, ears slouching a little downwards; it is well disposed to fatten, and perfectly hardy.

In order to have hogs of the most perfect kind, the same attention should be paid in the breeding of them, as in other sorts of animals. See **Breeding**. It is also of great importance that the piggery, or sties, should be convenient, so as to feed them properly, and to convert all their evacuations, received on litter, into the most profitable manure. They may be fed according to circumstances, with beans, peas, barley, buckwheat, potatoes, carrots, parsnips, Swedish-turnips, cabbages, lettuces, clover, lucern, &c.; but for *fattening* these animals, we believe that nothing is equal to dairy wash; that is, whey and such other products of the dairy farm. They are, however, sometimes fattened with little else besides potatoes. The time necessary for fattening these animals must vary very much, depending upon the state in which they are put up; but in general, from five or six weeks to two or three months is sufficient. During this period, it is of great importance that they should be kept dry, warm, and clean; whenever they fret, they never fatten well. See **Bacon** and **Ham**.

Pigs are subject to various diseases, but the mode of treating them is not well understood. The mange may be cured by a sulphur ointment.

The *Æthopicus*, or Ethiopian hog, has a larger body and shorter legs than our common hog; about five feet long and about two feet and a half high. It is of a dusky colour; found in the hottest regions of Africa, and also in Madagascar. They live chiefly under ground; are lively, swift, fierce, and cunning, and, in appearance, very hideous.

The *Africanus*, or Cape hog, is of a superior size and peculiar to Africa between Cape Verd and the Cape of Good Hope. Has been confounded by some naturalists with the preceding; but the form of the head, structure of the mouth and body, being covered all over with long fine bristles, are distinct specific marks.

The *Babyrussa*, or Babyrussa, has two crooked tusks piercing through the upper part of the face; this animal is of a plump square form, and nearly equal to the stag in size; it is chiefly distinguished by its tusks, which bend like horns till their points nearly touch the forehead; back covered with a few bristles, the rest of the body with a soft wool. Inhabits Java, Celebes, and other islands of the Indian ocean. They are gregarious, and may be domesticated.

The *Porcus*, or Guinea hog, inhabits Guinea; another variety Siam; less than than the common hog.

SWINE-STONE, or **Stinkstone**, a genus of calcareous earths consisting of carbonate of lime, carbonic acid, sulphuretted hydrogen, and water; when scraped or rubbed, emits a urinous or garlic smell: soluble almost entirely in acids; burning into quick lime. *Black marble*, or Common swine-stone, *schistous marble*, *sparry dysodes*, *botryoidal limestone*, or gorsten, and *radiated*, or crystallized swine-stone, are the chief. Some of these are found in Great Britain, others in various parts of Europe, chiefly Sweden.

SWOON, **Fainting**, or *Syncope*, a disease, or peculiar state of the body, in which the respiration and action of the heart either cease, or become much weaker than usual, with paleness and coldness; the pulse becomes slow and tremulous; the limbs are flexible and exhausted of their strength; and the whole body is in a state of deadly torpor. The patient, however, frequently hears what is passing around him, although incapable of any exertion; the recovery is, in most cases, preceded by a deep sigh.

It may arise from various causes; such as sudden and violent emotions of the mind, pungent or disagreeable odours, derangement of the stomach or bowels, debility from preceding disorders, loss of blood, spontaneous or artificial, the operation of tapping in dropsy, &c.

During the fit, the patient should be exposed to pure and cold air; the nostrils may be stimulated with some of the preparations of ammonia; or a few drops of the compound spirit of ammonia, may be given in a small quantity of water, if the patient be capable of swallowing. If it originate in a disordered state of the stomach, an emetic, if possible, should be given; or vomiting, excited by irritating the fauces, will probably afford relief. Sometimes, sprinkling the face with cold water will also recover the patient. Persons who faint without having evinced previous illness, or other symptoms of debility, may probably be relieved by moderate bleeding; this, of course should be done under the direction of an experienced medical attendant;'afterwards an opening medicine, such as sulphate of magnesia or infusion of senna, may be given. Sometimes copious draughts of chamomile tea, when nausea, vomiting, and bitter taste in the mouth are present, will be of service. But, of course, in serious affections of this kind, particularly in male subjects, the best medical advice should at once be had. Persons liable to fainting will find our articles Appetite, Digestion, Dyspepsia, Hypochondriasis, and Hysteria, deserving their careful attention.

SWORD-FISH, or *Xiphius*, a genus of fishes comprising two species; distinguished by being furnished with a long, hard, sword-shaped, upper jaw; mouth without teeth; gill membrane eight-rayed; body rounded without apparent scales.

The *Gladius*, has the dorsal fin falcate. The upper jaw projects about four times the length of the lower one; it is compressed at the top and bottom, and sharpened towards the point; it is three feet long, resembling a sword in shape; its substance is rough and hard, and capable of piercing and sinking small vessels at sea. This animal grows to the length of twenty feet; the head alone weighing sometimes more than seventy pounds. Body long and slender, thick towards the head, but tapering towards the tail; colour above black, beneath silvery white; the lower jaw terminates like the upper one in a sharp spear-like point; but much shorter; tail crescent-shaped; a very voracious fish. Found sometimes on the British coast, but more frequently in the Mediterranean, particularly in the Straits of Messina. Flesh good.

The *Platypterus*, or Indian sword-fish, has the body silvery bluish-white; back, head, and tail, deep brown; grows to the length of twenty feet, and is a very powerful fish; frequently attacks whales, and pierces the sides of ships with its sword-like snout. Inhabits the Brasilian and East Indian seas.

SYCAMORE, or *Acer*, *Pseudo-Platanus*, a species of maple, a very large and beautiful tree, with broad leaves, divided into five lobes, serrated in their edges; of a dark green colour on the upper side, but paler and somewhat hoary underneath; flowers small, greenish-white; two varieties, one with broad leaves, and large keys, the other with variegated leaves; it sometimes attains the age of three or four centuries. It may be propagated by seeds or layers. The keys, or seeds, when ripe, in autumn, may be gathered, and in a few days after sown about an inch and a half deep, in beds of common mould. In spring, the plants will appear. The next spring they should be transplanted into the nursery, in rows two feet and a half apart, and distant from each other in the rows one foot and a half. Here they may remain until they are large enough to be planted out, requiring no other attention than to be kept free from weeds, and having the unsightly side-branches taken off. Those raised from seeds will grow faster, and make larger timber, than those from layers; but they will not produce such quantities of flowers; for shrubberies, therefore, those from layers are the best. The wood of this tree is of some importance. See MAPLE, PLANTATION, and TIMBER.

Sycamore-fig. See FIG.

SYENITE, a species of granitic rock of various colours, consisting of hornblende, quartz, &c. It is found in great plenty at Syene, in Upper Egypt, and was used for architectural purposes by the Egyptians and Romans. Syenite is found in various parts of Great Britain: in Pembrokeshire, in Cumberland, and in Leicestershire at Markfield Knowle.

Syllogism. See LOGIC.

SYMPATHY, in anatomy, that affection of different parts in which they evince similar sensibilities or actions. All the body is, however, sympathetically connected together, and dependent, the one part upon the rest, constituting a general sympathy; but particular parts are more intimately dependent, and sympathize with each other, than upon the rest of the body, constituting a particular sympathy.

The doctrine of sympathies is by no means so well understood, or attended to, as could be wished: for by the most accurate attention to, and a knowledge of, sympathies, we have no doubt, that the healing art may be considerably improved, and our corporeal and mental maladies more speedily and certainly cured.

Our various particular corporeal sympathies can hardly have escaped the attention of the most common observer. From the extensive sympathy of the *stomach*, with almost every part of the body, we find that this most frequently suffers and is affected in some way or another, in almost every disease, whether general or local, provided the diseased action is in any degree considerable. Nor is this sympathy of the stomach confined to bodily affections; those of the mind having very often even greater and more immediate influence than any corporeal sympathy whatever: such are the sympathies propagated from the brain to the stomach by fear, grief, terror, &c. The corporeal as well as mental sympathies of the sexes, are no less powerful than striking; the sympathy of the stomach with the brain; of the stomach with the liver; of the intestines with the stomach; and of the skin with the parts below it, may also be mentioned as particular sympathies, which are also more or less striking, and which observing persons cannot have failed to notice.

The sympathy of the stomach with the palate, relative to food and drink, is not among the least of the extraordinary sympathies which we possess. When the stomach is in good health the promptings of this sympathy are important, and ought to be attended to: but when *disease* is present, either in the stomach itself, or in the tongue and mouth, this sympathy often produces singular desires and inclinations for aliment. These desires and inclinations ought sometimes to be gratified; but at others, their gratification is often attended with considerable mischief. Many of our errors relative to food in dyspepsia, and other diseases, originate in a neglect of proper discrimination in the choice of it: for it very often happens that our sympathies prompt us to desire certain food, and even relish it, yet, soon after such food enters the stomach, a variety of unpleasant symptoms frequently arise. We have elsewhere noticed this circumstance; but it cannot be too strongly impressed upon the reader's attention. Persons too often suppose, merely because they *relish* food, that it must be proper for them:

in many diseased states of the stomach, no opinion can be more erroneous.

From a consideration of the general sympathy which all the parts of the body possess, and from the supposition, perhaps a just one, that if the action of one part is in excess, the action of another part is proportionably diminished, many important conclusions may be drawn, which will be of great practical utility. Hence in diseases affecting the vital organs, or the abdominal viscera, particularly those attended with inflammation, it has been for a long time customary to excite the action of the exterior parts of the body, in the immediate neighbourhood of the diseased organ, by blisters, fomentations, &c. But, from a valuable paper lately published by Dr. KINLAKE, in the *Medical Journal, on Transferred Irritation,* it appears very probable, that a blister, or other powerful stimulant, applied to the arms, or legs, promises a more successful result, by *transferring* the disease to a less vital, and, consequently, to a part from which less danger can be likely to ensue.

Attention to these *bodily* sympathies, is, doubtless, of importance; but attention to our *mental* sympathies is not less necessary, both to our moral and physical well-being. Our corporeal sympathies relate, for the most part, only to, and have connexion with, ourselves individually; but our mental sympathies, it is well-known, extend to and influence those around us. These, which originate primarily, we are disposed to think, from our corporeal sympathies, have, aptly enough, been termed the GRAND SYMPATHIES of our nature. On these grand sympathies, and their due regulation and employment, does our happiness or misery very materially depend. Independent of all education, or, at least, of any particular education, these sympathies belong to us as animated beings. It is the particular province of the understanding to give them a proper direction, in order that they may be productive to ourselves, as well as to society, of the greatest possible quantity of good. It is in the misdirection, or in the abuse of our sympathies, that the crafty and designing have been engaged, in all ages, to mislead and to deceive us. It is by artfully engaging our sympathies, that the interested, or the weak advocates for superstition, have involved mankind in the grossest errors and absurdities; and it is only by a resolute determination to preserve intellectual freedom and independence, that our sympathies can be rendered subservient to the greatest and noblest purposes. See AFFECTION, MIND, &c.

Upon our *mental* sympathies depend also the impositions and frauds which have been from time to time practised by the professors of animal magnetism; but it is now well-known that such frauds can only be successfully played off upon the weakest and most credulous of mankind. See FASCINATION.

Syncope. See SWOON.

Synocha. See FEVER.

SYNOCHUS, a mixed fever, beginning with symptoms of synocha, or inflammatory fever, and terminating in typhus; the former usually preponderating at the commencement, and the latter towards its termination. It is generally considered a contagious disease. The treatment in the beginning should be the same as that described under *inflammatory fever,* see FEVER, except that the lancet must be more sparingly employed. When the character of the disease is changed, the means proper will be such as are pointed out under *typhus,* see TYPHUS. But, of course, in a disease of this dangerous nature, the best medical advice will at once be had.

SYNOVIA, in anatomy, an albuminous fluid, secreted in certain glands in every joint where the bones are faced with a cartillage for a sliding motion. Its use is to lubricate the surface of the bones of the joint, and to facilitate their motions.

SYPHILIS, or SIPHILIS, that state of the venereal disease, in which the virus has been received into, or diffused through, the whole system, producing its peculiar effects, such as ulcers of the mouth or fauces; spots, tetters, and ulcers of the skin, pains, swelling, caries of the bones, &c. It is always produced by a peculiar or specified poison, which may be introduced into the system in various ways; such as by exposing to the contact of the poison, any part of the surface of the body, especially if the part so exposed, have been previously excoriated, wounded, or ulcerated; or it may be communicated to or from nurses from or to children, in the act of sucking; or it may be communicated by a lancet, or scarifying instrument, infected with the virus; or, indeed, by various other possible ways; but the most common method in which this disease is produced, is by impure sexual intercourse.

It is a most insidious complaint: sometimes from its first contact, symptoms of its having entered the system are observed in the course of six or eight weeks, or probably much sooner; but in other cases it is many months before any visible effects of it are produced. The first symptoms, however, usually show themselves on the skin, and in the mouth or throat.

If the disease be suffered to take its own course, a variety of distressing symptoms arise, accompanied with ulcerations in different parts of the body, nocturnal pains and nodes; the countenance becomes sallow; a loss of appetite, flesh, and strength ensues; a hectic fever succeeds; caries of the bones; and, in many cases, death.

If, however, the complaint be recent, and the constitution not impaired by other diseases, a perfect cure may be easily effected, and for this purpose, the best medical advice should immediately, upon the appearance of the disease, be obtained.

It may be perhaps useful to observe, that as far as is hitherto known of the cure of this disease, it cannot be accomplished without the assistance of *mercury*; and that whoever pretends to cure it without this powerful drug, is either deceiving the patient or himself. It ought also to be known, that there is no actual necessity for the patient being *salivated*, as a skilful medical attendant may so apportion the doses of the medicine as to avoid this process, and, at the same time, render its operation in the removal of the disease equally effectual. During the mercurial course, the patient ought to be kept moderately warm, and not be exposed to great vicissitudes of heat and cold, or wet.

Syrian herb mastich. See MARJORAM.

SYRIAN MALLOW, or *Hibiscus*, a genus of plants comprehending sixty-six species, chiefly natives of the East and West Indies, America, and the Cape of Good Hope. The following are the chief:

The *Elatus*, with hearted, roundish, hoary leaves; flowers single, large, of a purplish saffron hue; a native tree of Jamaica, growing fifty or sixty feet high.

The *Rosa chinensis*, or Chinese rose, with ovate, pointed, glabrous, very entire leaves; stems arboreous; a native of the East Indies.

The *Phœnicus*, with ovate, pointed, and serrate leaves, is a small East Indian shrub, with beautiful scarlet flowers.

The *Mutabilis*, has hearted, angular, five-lobed, pointed leaves; stem arboreous, rising to twelve or fourteen feet; flowers in the morning large white; at noon pale flesh colour; in the evening rosy, and they fall off at sun-set; a native of India; in our own climate the flowers neither change nor fall off so rapidly.

The *Syriacus*, or Althæa frutex, has an arboreous stem, and wedge-ovate, three-lobed, toothed leaves.

The *Abelmoschus*, or Musk mallow, with leaves somewhat peltate, hearted, seven-angled, pointed, and serrate; stem bristly; a native of India, with large seeds, and a very strong musky odour.

The *Tiliaceus*, or Maho tree, has roundish, hearted, pointed, crenate leaves; stem arboreous; flowers pale yellow; a native of India.

The *Esculentus*, or Eatable hibiscus, has heart-shaped, five-lobed, rather obtuse, toothed leaves; outer calyx, ten or twelve parted; deciduous; inner one bursting longitudinally, and discharging a number of heart-shaped seeds, which are cut and dried when gathered green, and used as spices in soups, and other culinary preparations.

Many of these are common to our own gardens and green-houses; and, in general, propagated without much trouble.

SYRINGA, Mock orange, or *Philadelphus*, a genus of plants, consisting of two species, the *coronarius*, or White syringa, a shrub long cultivated in the gardens of our own country, and introduced from the South of Europe; leaves slightly toothed, rough, opposite, tasting like cucumbers; flowers yellowish white, with a powerful and *somewhat sickening fragrance*. And the *inodorus*, or Carolina syringa, with entire leaves, and large, white, inodorous flowers; a native of North America. Both these sorts are easily propagated by layers, cuttings, or suckers.

SYRINGE, a small simple machine, serving to imbibe, or suck in a quantity of water, or other fluid, and then to squirt or expel the same with more or less violence in a small jet. Syringes are made chiefly of ivory, bone, or pewter. They are usefully employed for injections of various kinds.

A patent for an *improved* syringe by Mr. John Read, has been lately obtained; it consists chiefly in an additional tube; and may become useful in the administration of clysters, &c. A description of this improved syringe, with a plate, may be seen in the 6th No. of the *London Journal of Arts.*

SYRUP, or *Syrupus*, in pharmacy, a solution of sugar in water, and many other liquids. The mode of determining the proper consistence of a syrup, is mentioned under the article Pharmacy, to which, threfore, we refer.

The most useful syrups are described under the respective articles, whence they are named. See Buckthorn, Ginger, Lemon, Marsh Mallows, Mulberry, Orange, Pink, or *Clove July flower;* Poppy, Roses, and Saffron.

Simple syrup. Take of refined sugar two pounds and a half; water one pint. Dissolve the sugar in the water by means of a water bath; then set it aside for twenty-four hours; take off the scum; and if there be any fæces, pour off the clear part from them. This is useful for forming pills, boluses, &c. where no particular syrup is ordered.

Syrup of vinegar. Take of vinegar five ounces; refined sugar seven ounces; boil, so as to form a syrup. It is very liable to spoil; it should only, therefore, be made in small quantities at a time.

It may be used for sweetening barley water or gruels, in fevers and inflammatory diseases.

SYSTEM, a term in medicine, nearly synonymous with constitution. See Constitution. It is sometimes, however, applied to parts, or peculiar structures of the human body; thus there are the *vascular*, and the *nervous* system.

T.

TABASHEER, a substance which has been long used as a medicine in Turkey, Syria, Arabia, and Hindostan. It is found in the cavities of the bamboo, the *arundo bambos* of Linnæus; and it is supposed that it exists originally in the state of a transparent fluid, which acquires by degrees the consistency of a mucilage resembling honey, and is afterwards converted by gradual induration, into a white solid called *tabasheer*. From analysis, it appears to be perfectly identical with common siliceous earth. It has been found, also, in the bamboos of South America. Its optical properties are of a very singular nature, an account of which, by Dr. Brewster, may be seen in the Philosophical Transactions for 1819.

TABERNÆMONTANA, a genus

of plants comprising twelve species, natives of the East and West Indies, or of America; they are distinguished by a twisted corol; follicles two, horizontal; seeds immersed in pulp. The following are cultivated: the *citrifolia*, or Citron-leaved, the *aurifolia*, or Bay-leaved, the *amsonia*, or Virginian, and the *angustifolia*, or Narrow-leaved tabernæmontana. The first and second are somewhat shrubby; the third herbaceous; the fourth perennial in its root. They may be all increased by seeds; the last two will bear the open air.

TABES, a disease distinguished by a wasting of the body; it may arise from various causes: from an ulcerous discharge, from scrofula, from excessive indulgence in sexual intercourse, from poisons, &c. See ATROPHY, and LEAD.

In tabes the utmost attention is necessary to diet and regimen. The patient suffering under this disease, will find many observations deserving his careful consideration, under ALIMENT, APPETITE, BREAKFAST, DINNER, DYSPEPSIA, HYPOCHONDRIASIS, EXERCISE, &c.

Table-Beer. See BREWING.

TACAMAHACCA, the name of a resinous substance, which exudes both spontaneously and when incisions are made into the stem of the *calophyllum irophyllum*, and not the *populus balsamifera*, as formerly supposed. See POPLAR. It is of a pale yellowish, or greenish colour, has a fragrant smell, and a bitterish aromatic taste. It was formerly esteemed as an ingredient in warm stimulating plasters, and also given internally as an astringent balsamic, but it is wholly unknown in modern medicine.

TACHOMETER, an instrument to ascertain the velocities of machinery.

Tadpole. See FROG.

Tænia. See TAPE WORM.

Tailed wasp. See WASP THE TAILED.

TALC, or *Talcum*, in mineralogy, a genus of earths consisting principally of carbonate of magnesia, silex, and carbon. It is soft, greasy to the touch, not admitting a polish; hardening in the fire, not effervescing with nitric acid, and absorbing oil. Eleven species have been enumerated; the Keffekil, or sea froth,—Chlorite, or peach,—Talcose mica,—Spanish chalk,—Soap-stone, or steatites,—and Pot-stone, are the chief. These are found in different parts of Europe; the first also in North America, and in Cornwall; soap-stone is also found in Cornwall. See MICA and SERPENTINE.

Tallow. See FAT.

TALLOW-TREE, a name given to several trees of different genera, whose expressed oil is sufficiently thick, and in sufficient abundance to answer the purpose of tallow, and to be used for the manufacture of candles. The chief of these are the *Croton sebiferum*, and the *Tomex sebifera*, both natives of China. The former has rhombic, ovate, pointed, very entire, and glabrous leaves. The latter has glabrous, heart-shaped, red leaves and corols, without florets; it is about the height of a cherry-tree. Its fruit is inclosed in a kind of pod, or cover, like a chesnut, and consists of three round white grains, of the size and form of a small nut, each having its peculiar capsule, and within a little stone. This stone is encompassed with a white pulp, which has the consistence, colour, smell, and other properties of animal tallow. With this tallow the Chinese make their candles; and did they understand the mode of purifying it as well as we do our animal tallow, their candles would be, doubtless, equal to ours; the chief defects, however, in the Chinese candles, arise from the wicks, which are made with a little rod of dry light wood, covered with the pith of a rush wound round it. See CANDLE-BERRY MYRTLE.

TAMARIND-TREE, or *Tamarindus*, a genus consisting of one species only, the *Indica*, a native of the East and West Indies, Arabia, and Egypt. It is a large, beautiful, spreading tree; the leaves are pinnate, with leaflets only half an inch in length, of a bright green colour, downy, oblong, entire, and obtuse. The flowers are in bunches; the petals yellowish, beautifully variegated with red veins. The pods are thick, and of a dull brown colour when ripe; those from the West Indies from two to five inches long, with three or four seeds; those from the East Indies are twice as long, and contain five, six, or seven seeds; they are flat, angular, and shining, and surrounded with a dark, acidulous, pulpy matter. In the West Indies the pods are gathered in June, July, and August, when fully ripe; and being freed from the shelly fragments, are placed in layers in a cask, and boiling syrup poured over them till the cask is filled; the syrup pervades every part, and, when cool, the cask is headed for sale; sometimes, however, they are preserved with raw sugar, when they are of a choice kind and the pods large: in the large way they are either imported in puncheons, or other large casks; but the best are brought in casks of a much smaller size, and in which the pods are large and usually unbroken. The medicinal qualities of all tamarinds appear to be the same. The acid is chiefly the citric, one ounce and a half of which is contained in sixteen ounces of the prepared pulp; they also contain small portions of the tartaric and malic acids.

Tamarinds and their pulp are refrigerant and laxative. An infusion of the pulp in warm water, or a whey, made by boiling two ounces of it in two pints of milk, and straining, form very grateful refrigerant drinks in febrile diseases. The dose of the preserved fruit necessary to act upon the bowels, is so large, that it is seldom given alone as a purgative, but is generally combined with cassia, or manna, the action of which it augments; or with such of the neutral salts as are not decomposed by it; which is the case with those having potash for their base, which should not, therefore, be mixed with this fruit. The most acid tamarinds are the most powerful. See CONFECTION.

The fruit of tamarinds is sometimes usefully given to children to relax the bowels, when there is difficulty in giving them other medicines, as they will often eat them as a sort of sweetmeat. They are, however, uncertain in their dose and operation.

The tamarind is cultivated as a hothouse plant in our own gardens, and increased by seeds obtained from its native soil.

TAMARISK, or *Tamarix*, a genus of plants comprehending four species, one an East Indian, the rest European trees or shrubs. The two following are cultivated: the *Gallica*, or French tamarisk, having quinquemale, pale, flesh-colour flowers, leaves linear-lanceolate; found wild in various parts of Europe, and on our own sea coasts; a variety in Russia, having the leaves and stem covered with hoary down. The *Germanica*, or German tamarisk, has linear-lanceolate, sessile leaves; a variety with an annual herbaceous stem. The first of these is a tree of a middling size, growing in France, Spain, and Italy; and the second is a native of some moist lands in Germany. Both are readily propagated by laying down their tender branches in Autumn; or by planting cuttings in an east border, which should be, in dry weather, occasionally watered. Their after culture requires no particular direction.

TANAGER, or *Tanagra*, a genus of birds, comprehending forty-eight species, all of foreign extraction, and nearly all belonging to the West Indies and America. The tanagers in South America, may be regarded as the representatives of the sparrow of Europe; a genus which they resemble in almost every particular, except the colour, and the small grooves hollowed out of the sides of the upper mandible towards the point. They are also, like the sparrows, gregarious; but the tanager lays only two eggs at a brood; they, however, as well as most other birds in warm climates, breed very often. The following are specimens of this tribe:

The *Jacapa*, or Red-breasted tanager, is black; front, throat, and breast scarlet; female purplish brown, beneath reddish; wings and tail brown; six and a half inches long; frequents inhabited places, and builds a pendulous cylindrical nest; feeds on fruit; eggs white, with reddish spots; inhabits South America.

The *Violacea*, or Golden tanager, is violet; beneath, and hind-head, fine yellow; another variety, black instead of violet; female above olive; young bird blue and olive; very destructive to rice plantations; variable in its colours; three and a half inches long; inhabits South America.

The *Mexicana*, or Black and Blue tanager, is black; beneath yellowish; breast and rump blue; another variety with tail coverts green; body beneath white; five inches long; sings very finely; inhabits South America.

TANNIN, or TAN, a substance, called sometimes the *astringent principle*, which, when combined with gelatine, forms an insoluble compound, of a yellowish brown colour, called in commerce LEATHER. See the next article.

Tannin exists in many vegetables: in their leaves, bark, and wood. It may be procured by digesting bruised galls, grape-seeds, oak bark, or catechu, in a small quantity of cold water. The solution affords, when evaporated, a substance of a brownish yellow colour, extremely astringent, and soluble in water and in alcohol. The purest form of tannin is said to be that derived from bruised grape-seeds. Oak bark is, however, most commonly employed in converting animal skins into leather, (see the next article,) but the barks of many other trees may be occasionally substituted. The following is the average quantity of tannin contained in 480lbs. of different barks:

	lbs.
Middle-sized oak cut in spring	29
Spanish chesnut	21
Leicester willow, (large size)	33
Elm	13
Common willow, (large)	11
Ash	16
Beech	10
Horse Chesnut	9
Sycamore	11
Lombardy Poplar	15
Birch	8
Hazel	14
Black Thorn	16
Coppice Oak	32
Oak cut in autumn	21
Larch cut in autumn	8
White interior cortical layers of oak bark	72

Tannin forms a precipitate with solution of starch, with gluten, and albumen, and with many of the metallic oxides. It may be formed artificially (see Mr. HATCHETT's *Papers, in the Philosophical Transactions* for 1805, and 1806,) by digesting charcoal in dilute nitric acid, during several days, which is at length dissolved, and a reddish brown liquor is obtained, which furnishes, by careful evaporation, a brown glossy substance, amounting to about 120 parts from 100 of charcoal. This *artificial* tannin differs only from natural tannin in resisting the action of nitric acid, by which all the varieties of natural tannin are decomposed. It is, however, suspected, that natural tannin is rarely, if ever, obtained perfectly free from extractive and gallic acid, substances which are not contained in artificial tannin.

TANNING, the process of converting hides and skins by means of *tannin*, the substance described in the preceding article, into leather.

In this important art, it cannot be too generally known, that the *real* skin, (not the scarf skin, or cuticle) of every animal, consists almost entirely of gelatine, and as leather is a combination of gelatine and tannin, the whole art of forming it consists in combining both together, so as to form one insoluble compound. This art, as at present known and practised, is a very tedious one, generally taking many months before the skin is throughout converted into leather. Many attempts have been made to shorten the process, and many patents have been taken out for improvements in the art of tanning, but we are not aware that any of them are deserving of particular mention here, if we except one obtained some years since, by Mr. DESMOND, and another by Mr. W. A. RONALDS, of Hammersmith, an account of which last may be seen in the Monthly Magazine, for July, 1818. And, although even Mr. Ronalds' patent does not, perhaps, accomplish all which the patentee holds forth, viz. that of tanning leather in a few weeks, yet it is certainly ingenious, and deserves the consideration of those whom tanning more immediately concerns.

The process of tanning varies considerably, not only in different countries, but even in different parts of the same country. The following is the method most approved, and practised in London and its vicinity.

Leather consists of three kinds: viz. *butts*, or *backs*, *hides*, and *skins*. Butts are generally made from the stoutest and heaviest ox-hides, thus: After the horns are taken off, the hides are laid smooth in heaps, for one or two days in summer, and five or six in winter; they are then hung on poles in a close room called a smoke-house, in which is kept a smouldering fire of wet tan; which produces a degree of putrefaction, by which means the hair is easily got off, by spreading the hide on a sort of wooden horse, or beam, and scraping it with a crooked knife. The hair being removed, the hide is thrown into a pit, or pool of water, to cleanse it from dirt, &c.; which being done, it is again spread on the beam, and the grease, loose flesh, extraneous filth, &c. carefully scrubbed out, or taken off. The hides are then put into a pit of strong liquor called ooze, prepared in pits called letches, or taps, kept for the purpose, by infusing ground oak-bark in water: this is termed colouring. After which they are removed into another pit, called a scouring, consisting of water strongly impregnated with sulphuric acid, or with a vegetable acid prepared from rye, or barley. This operation is called raising. The hides are then taken out and spread smoothly in a pit, usually filled with water, called a binder, with a quantity of ground bark strewed between them. After lying a month or six weeks, they are taken up, and the decayed bark and liquor being drawn out of the pit, it is filled again with strong ooze, when they are put in as before, with bark between each hide. They now lie two or three months, at the expiration of which time, the operation is repeated; they then remain four or five months, when they are again submitted to the same operation; and after being three months in the last pit, are completely tanned, unless the hides should be so very stout as to require an additional pit or layer. The whole process requires from eleven to eighteen months, and sometimes two years, according to the thickness of the hide, and the discretion and judgment of the tanner. When taken out of the pit, they are hung upon poles: and after being compressed by a steel pin, and beaten out smooth by wooden hammers, or beetles, the operation is complete; and when thoroughly dry they are fit for sale. Butts are chiefly used for the soles of shoes.

Hide leather is generally made from cow-hides, or the lighter ox-hides, thus: After the horns are taken off, and the hides washed, they are put into a pit of water saturated with lime, where they remain a few days, when they are taken out and the hair scraped off as directed above for butts; they are then washed in a pit, or pool of water, and the loose flesh, &c. being taken off, they are removed into a pit of weak ooze, where they are taken up and put down, *(handled)* two or three times a day, for the first week: every second or third day, they are shifted into a pit of fresh ooze, somewhat stronger than the former, till at the end of a month or six weeks, they are put into a strong ooze in which they are handled once or twice a week, with fresh bark for two or three months. They are then removed into another pit called a layer, in which they are laid smooth, with bark ground very fine strewed between each hide. After remaining here two or three months, they are taken up, when the ooze is drawn out; they are then put in again with fresh ooze and bark; where, after lying two or three months more, they are completely tanned; except a few very stout hides, which may require an extra layer; they are dried, hammered and smoothed like the butts. These are called crop hides, and are from ten to eighteen months in tanning. They are used also for the soles of shoes.

Skins is the general term for the skin of calves, seals, hogs, dogs, &c. These, after being washed in water and put in lime pits, as before mentioned, are taken up and put down every third or fourth day for a fortnight or three weeks. The hair is then scraped off and the flesh and other excrescences being removed, they are put into a pit of water impregnated with pigeons' dung, forming a strong alkaline ley, by which, in a week or ten days, being scraped over several times with a crooked knife during that period, they are cleansed from the lime, grease, and saponaceous matter, and other impurities; and are also softened for the reception of the ooze. They are then put into a pit of weak ooze, in the same manner as the hides, and being frequently handled, are by degrees removed into a stronger and still stronger liquor, for a month or six weeks, when they are put into a very strong ooze, with fresh bark ground very fine, and at the end of two or three months, according to their thickness, are sufficiently tanned; when they are taken out, hung on poles, and dried for sale. These skins are afterwards dressed and blacked by the currier. See LEATHER. They are used for the upper leathers of shoes, boots, &c. The lighter sorts of hides, called dressing hides, as well as horse hides, are managed nearly in the same manner as skins; they are used for coach-work, harness, &c.

Tanner's-bark. See HOT BED.

TANSY, or *Tanacetum*, a genus of plants consisting of eighteen species, chiefly natives of the Cape, the rest of Europe, or the Levant, one common to our own wastes. The following are cultivated; the *vulgare*, or Common tansy, an indigenous perennial, found by the road side and on hills; and flowering in July and August, has doubly pinnatifid, and deeply serrate leaves; flowers of a golden colour; root creeping. The leaves and flowers have a strong, not very disagreeable smell, and a bitter, somewhat aromatic taste. It is esteemed anthelmintic, and is occasionally used for such purpose, but it does not appear of much importance. The dose of the leaves in powder is, from one scruple to a drachm, twice a day. The *annuum*, or Annual, the *sibericum*, or Siberian, the *suffruticosum*, or Shrubby, the *flabelliforme*, or Fan-leaved tansy; the *balsamita*, or Costmary. The herbaceous kinds are increased by seeds, and by parting the roots; the shrubby sorts by cuttings of the branches in spring and summer.

Tantalite. See TANTALUM.

TANTALUM, or COLUMBIUM, a new metal first discovered by Mr. Hatchet, in a mineral from North America. It is found combined with the oxides of iron and manganese, and also with yttria, in the minerals called tantalite, and yttro-tantalite. Tantalite is chiefly found in octoëdral crystals, and in masses of a black or grey colour in Finland. Its specific gravity is 7·9, and it contains of oxide of columbium 10; oxide of iron 12; oxide of manganese 8.

Columbium may be obtained from columbite, or tantalite, by mixing 5 parts of the finely-powdered mineral with 25 of carbonate of potash, and 10 of borax, fusing the mixture, and, when cold, digesting it in muriatic acid; which dissolves every thing except the oxide of columbium, which remains in the form of a white powder.

Columbium, in its metallic state is of an iron colour, very hard and brittle, and burns at a red heat into a whitish oxide.

The oxide of this metal is soluble in the tartaric, citric, and oxalic acids; but neither the properties of these combinations, nor of the metal itself, are much known.

TAPE-WORM, or *Tænia*, a genus of intestinal worms, comprehending ninety-one species; they are distinguished by a flat body, composed of numerous articulations; head with four orifices for suction a little below the mouth; mouth terminal, continued by a short tube into two ventral canals, and generally crowned with a double series of retractile hooks, or holders. They are destined to feed on the juices of various animals, and are mostly found at the upper part of the intestinal canal. They sometimes exist in great numbers, and occasion very distressing ailments. They have the power of reproducing parts which have been broken off, and are, therefore, removed with considerable difficulty. They are oviparous, and discharge their numerous eggs from the apertures of the joints. They are thus subdivided:—Found in other parts besides the intestines, and furnished with a vesicle behind; these are called *hydatids,*—Found in the intestines only, and without the terminal vesicle —Head unarmed, with hooks The following are the chief of these different divisions:

Of the first division, the *visceralis* is fish-form, inclosed in a vesicle, found in the liver, placenta, sac containing the dropsical fluid, and other morbid tumours of mankind; sometimes solitary, sometimes gregarious; the *cellulosa* inhabits the cellular substance of the muscles of man; is about an inch long, half an inch broad, and one-fourth thick; very tenacious of life; head furnished with hooks. The *hydatigena* inhabits the liver of Norway, and some other rats; from one and a half to eight and a half inches long. The *ferarum* inhabits the liver, and other parts of stags and antelopes; size of a nut, or walnut, and sometimes even larger. The *cerebralis* is found, in vast numbers, in the brain or spinal marrow of sheep; they occasion giddiness and staggering. The *granulosa* is found in the liver of sheep; the vesicles from the size of a nut to that of a hen's egg, and containing each, many thousand animalcules, swimming in the fluid with which it is filled.

To the second division belong the *solium*, with the body composed of a number of distinct joints, appearing as if sheathed in each other, each joint with a lateral marginal pore, by which it attaches itself to the intestines, those near the head a little smaller, enlarging towards the middle, and gradually lessening towards the tail. Inhabits the intestines of mankind; from three to thirty feet long; and has been found as long as sixty feet. Sometimes solitary, but generally in considerable numbers, producing emaciation, and various distressing maladies. The *vulgaris* has the joints narrower and broader than the last, with a mouth in the centre of each joint; from one to five yards long; inhabits the human intestines; difficult to be destroyed. The remaining species of this division are chiefly denominated from the animal which they infest, such as the dog, wolf, fox, cat, squirrel, &c. and various birds and fishes.

The third division contains the *lata*, which is white, having the joints very short, and knotty in the middle, with a single mouth on each; inhabits the human intestines, chiefly in Switzerland and Russia, being rare in our own country; from six to forty yards long; more easily expelled than those previously described. This division also affords a great variety of species common to other animals in the same manner as the preceding.

It appears by a notice of Mr. T. M. BAGNOLD, in No. 20, of the *Journal of Science*, that some dogs which had eaten the intestines of rabbits, became affected with the tape-worm; hence Mr. B. concludes that, from the custom of giving the intestines of game to dogs, they have thus the ova of the worm, and even the worm itself deposited in the stomach and intestines, and which produce in the spaniel and pointer a formidable disease. The intestines of hares and rabbits, upon examination, have been found to contain, with very few exceptions, a perfect tape-worm from three to four feet long.

For the mode of removing these noxious animals from the human body, see WORMS.

TAPIOCA, a white granulated substance, obtained from the root of the *jatropha manihot*. See CASSAVA. It appears to be chiefly, if not entirely, starch, and forms a useful and agreeable variety of food for the sick and convalescent. It is prepared in the same manner as sago, and like that when boiled, till all the lumps are transparent, it is then in a fit state to be eaten. The transparent lumps need not be boiled till they are completely dissolved in the water, unless the patient should desire it.

TAPIR, a genus of quadrupeds consisting of one species only, the *Americanus*, having ten fore-teeth in each jaw; tuskless; hoofs on the fore-feet, four; hind-feet three; its general shape that of a hog; size that of a heifer half a year old; when young, body speckled with white, when full grown a dusky colour; the nose bears some resemblance to the proboscis of an elephant, extending far beyond the lower jaw, and susceptible of contraction or dilatation, at the pleasure of the animal; this proboscis, however, only belongs to the male; a native of South America, and one of the largest quadrupeds of the new world. He is sometimes domesticated, and becomes a mild and inoffensive animal. He is somewhat amphibious, swimming and diving well; feeds on grass, sugar-canes, and fruits; a salacious, slow, and sluggish animal; his voice a kind of hiss; skin thick, resisting sometimes both arrows and musket balls; it is an article of considerable value. The flesh is eaten by the Indians, but not much esteemed.

Tapping, in Surgery. See PARACENTESIS.

TAR, or *Pix liquida*, a thick, dark brown, or black, resinous adhesive juice, obtained generally by fire, from the wood and roots of various kinds of pine or fir-trees, during which process the wood itself is reduced to charcoal. It is brought to this country from various ports of the Baltic, and also from America; that which is thinnest and blackest is esteemed the best.

The following is the method of making tar in Sweden: the situation most favourable for this process is in a forest near to a marsh or bog, because the roots of the fir, from which the tar is principally extracted, are always the most productive in such places. A conical cavity is made in the ground, generally in the side of a bank or sloping hill; the roots of the fir, together with logs or billets of the same, being neatly trussed into a stack of the same conical shape, are let into this cavity. The whole is then covered with turf to prevent the volatile parts from being dissipated, which by means of a heavy wooden mallet, and a wooden stamper, worked separately by two men, is beaten down and rendered as firm as possible above the wood. The stack of billets is then kindled, and a slow combustion of the fir takes place without flame, as in making charcoal. During this combustion the tar exudes, and a cast iron pan being at the bottom of the funnel, with a spout, which projects through the side of the bank, barrels are placed beneath it to receive the fluid as fast as it comes away. The barrels, when filled, are bunged up and ready for exportation. It appears that this process of making tar is precisely the same as that described by *Theophrastus* and *Dioscorides*, which was practised by the ancient Greeks. Tar is, however, made in ovens built for the purpose in France and Switzerland.

The uses of tar as a preservative of timber, &c. from the weather; and in ship-building, are too well known to be enumerated here.

Tar has a strong odour familiar to every body; a resinous, subacid, bitterish taste. It consists principally of empyreumatic oil, resin, and acetic acid; it is partially soluble in water, and may be inspissated by boiling into pitch.

As a medicine, tar is stimulant, diuretic, and sudorific, and externally detergent in various cutaneous diseases. Its chief use, however, as a medicine, is in the following preparations.

Ointment of Tar: take of tar and prepared mutton suet, of each equal parts. Melt first the suet, and gradually add the tar; strain, and stir the mixture till cold. This is a useful ointment for scald head and other scabby eruptions.

An addition of one drachm of calomel, well mixed without heat, with one ounce of tar ointment, will make a much more active medicine in various cutaneous diseases. But its application requires discretion.

Tar water may be made thus: Take of tar two pints; water a gallon; mix them, stirring with a wooden rod for a quarter of an hour; then, after the tar has subsided, let the liquor be strained, and keep it in well-corked bottles.

This preparation is stimulant and diuretic, and may possibly prove useful in scurvy, and some cutaneous diseases. It is, however, scarcely heard of in modern medicine. From one to two pints may be taken in the course of the day.

Oil of Tar is occasionally used for some cutaneous eruptions of sheep, &c. but is never given internally. See PITCH.

Besides the tar obtained from the pine, several kinds of tar are found in commerce, such as *Barbadoes tar*, *Mineral tar*, and the tar latterly obtained from the decomposition of coal for gas. For an account of the first, see BARBADOES TAR.

Mineral tar is used for various purposes in the arts, particularly for coarse painting, to defend wood, &c. from the action of the weather. The tar obtained from coal does not appear to have been yet appropriated to many uses; its cheapness, (see CARBURETTED HYDROGEN,) is certainly an inducement to trials of its utility.

TARANTULA, a species of the genus *aranea*, or spider, the largest of all the European spiders; the body is downy, and of a brown colour with black spots; length three quarters of an inch; a native of the South of Europe. The bite of this animal is said, but without foundation, to be attended with fatal consequences: it is, however, poisonous in a small degree. The stories told of this animal, and of the cure of its bite by music and dancing, are totally undeserving attention.

Tare, in Botany. See VETCH.

TARRAGON, or *Artemisia dracunculus*, a species of MUGWORT, was accidentally omitted in our account of that genus. It is a native of France and the warmer climates of Europe, and is cultivated in this country for culinary purposes. It is a hot, bitter, pungent vegetable, and frequently eaten with lettuces and other salads; and it is also used occasionally in soups. Its seeds are also extremely pungent, and have been recommended as a substitute for the Indian spices. It may be propagated by parting the roots.

TARRAS, a species of cement, found in large strata under the surface of the soil, on the banks of the Rhine, and chiefly near Andernach, and on Mount Vogelburg; its colour is dull grey, or blackish, rarely variegated; the surface is rough and porous; it contains fragments resembling pumice, crystals of hornblende, mica, clay, slate, quartz, marble, iron ore, and other substances. When powdered it makes the best cement for building under water.

Plaster of Paris, or gypsum, in powder, is also, sometimes, called tarras.

Tarrock. See GULL.

TARSUS, in anatomy, that part of the foot from the heel to the metatarsus: it consists of seven bones, viz. the *astragalus*, which supports the bone of the leg called tibia; the *os calcis*, or bone of the heel, which is the largest bone of the foot; the *os naviculare, os cuboides*, and the *three ossa cuneiformia*. All these bones are of a very spongy texture, covered with a compact bony lamella.

TARTAR, *Tartarum*, or *Impure super-tartrate of potash*, is a substance deposited in wine casks during fermentation, from the juice of the grape, in which it exists in considerable abundance. It is in the form of a crystallized incrustation, and is found in commerce of two kinds, and most commonly called *argol*, and distinguished by its colour into *red* or *white*. It is a *bitartrate*, or *supertartrate of potash*. It is used in its crude state for various purposes in the arts, chiefly for dyeing. When purified by solution and crystallization, which renders it perfectly white, it is termed *cream of tartar.*

When exposed to heat, tartar fuses, blackens, and is decomposed; and carbonate of potash is the remaining result. Provided the tartar be free from lime, which, however, is seldom the case, this furnishes a good process for obtaining pure carbonate of potash. And formerly tartar was most usually employed for obtaining the subcarbonate of potash, commonly called *salt of tartar;* but, at present, this article is obtained much more easily and readily from the pearl-ashes of the shops. See POTASH.

Cream of tartar, or *Super-tartrate of potash*, is inodorous; but when dissolving in the mouth, imparts a harsh acid taste. Dissolved in water, the solution decomposes spontaneously by keeping, and deposits a mucous matter, and there remains a solution of carbonate of potash with a little oil. Cream of tartar is purgative, diuretic, and refrigerant; it is also esteemed useful in dropsies. As a refrigerant, dissolved in water and sweetened with sugar, it is a pleasant beverage in many febrile diseases; but, upon the whole, its powers seem to be unimportant.

The following compositions, into which tartar enters, are more powerful medicines: *Emetic tartar,* see EMETIC TARTAR. *Tartrate of potash,* see POTASH. *Tartrate of potash and soda,* see SODA, and *Tartaric acid,* see the next article

Oil of tartar is nothing more than a saturated solution of subcarbonate of potash in water; of course its medicinal virtues are the same as subcarbonate of potash, which see.

TARTARIC ACID, a vegetable acid, existing in great abundance in tartar, and cream of tartar. It may be obtained from the last article thus: Mix 100 parts of cream of tartar in fine powder, with 30 parts of powdered chalk, and gradually throw the mixture into 10 times its weight of boiling water; when the liquor has cooled, pour the whole upon a linen bag, and wash the white powder which remains with cold water: this is a tartrate of lime; diffuse it through a sufficient quantity of water, add sulphuric acid equal in weight to the chalk employed, and occasionally stir the mixture during twenty-four hours; then filter, and carefully evaporate the liquor to about one-fourth of its original bulk; filter again, and evaporate with much care nearly to dryness; re-dissolve the dry mass in about 6 times its weight of water; render it clear by filtration; evaporate slowly to the consistency of syrup, and set aside to crystallize. By two or three successive solutions and crystallizations, tartaric acid will be obtained in colourless crystals, soluble in six parts of water, at 60°. An aqueous solution of this, like other vegetable acids, soon becomes mouldy, and suffers decomposition. When submitted to destructive distillation it affords a brown acid liquor, termed the *pyrotartarous acid.*

This acid combines with the metallic oxides, and with alkalies, producing a class of salts called *tartrates.* The chief are mentioned in the preceding article.

Tartrate. See the two preceding articles.

TASTE, in anatomy, that power, or sense, which exists chiefly in the nervous papillæ of the tongue, and conveys to the mind the sensations of sweet, sour, bitter, acid, &c., in consequence of food, and other bodies, being immediately applied to that organ.

With animals, the faculty of taste is, in general, extremely acute, so that they very readily distinguish those things most proper for their food; and even in man, when no disease or bad habit has been induced, we may in general be assured, that no aliment is unwholesome which is of an agreeable taste. When, however, disease be present, this rule will require much circumspection and limitation.

TASTE, in the belles lettres, denotes that faculty or power of the mind by which we perceive and enjoy whatever is beautiful, elegant, agreeable, and sublime, in the works of nature or of art. Taste is chiefly the consequence of a careful direction of the mind, in that particular pursuit in which it is evinced; hence the obvious office of education in determining our tastes. Those tastes ought chiefly to be cultivated which contribute the most to our moral and social well-being. A taste for the various beauties of nature, for the country, and for simple pleasures; for agreeable society, for the interchanges of thought and intellectual wisdom, and for the useful arts, may be safely cultivated; but a taste for parade and shew, for pageantry of every kind, for foppery in dress, for theatrical amusement, and for congregating in large cities, ought to be repressed: such taste too often brings vice and misery in its train. See THEATRE.

Tawing. See LEATHER.

Tailor Bird. See WARBLER.

TEA-TREE, or *Thea*, a genus consisting of two species as follow:

The *Bohea* is an evergreen branched shrub, with alternate, obtusely serrate, emarginate leaves; flowers white, with six petals; in one variety the leaves elliptic, oblong, wrinkled; in another lanceolate, flat; a native of China and Japan. The dried leaves furnish the well-known bohea tea of the shops. The Chinese sometimes substitute the leaves of the *camellia sasanqua* for the leaves of the tea-tree; but they may be easily detected by the flowers, and the leaves not being slightly notched at the end.

The *Viridis*, or Green tea. The flowers of this species have nine petals; it is a native of Japan. This is by some considered merely as a variety of the first species.

The height to which these trees grow varies considerably. If left to themselves they would probably ascend thirty or forty feet; but they are usually cut down when they have risen six or seven feet, that they may make stronger shoots.

The tea-plant delights in valleys, and is frequent on the sloping sides of mountains, and the banks of rivers, where it enjoys a southern exposure. It flourishes in the northern latitudes of Pekin, as well as round Canton; but it attains the greatest perfection in the mild and temperate regions of Nankin. It is said only to be found between the 30th and 45th degree of north latitude. In Japan it is planted round the borders of fields, without regard to the soil; but as it is an important article of commerce with the Chinese, whole fields are, in China, covered with it, and it is there cultivated with care. It is said to grow on almost any soil; but the best grows in rocky ground, and the worst in a clay soil. It is propagated by seeds: from six to twelve are put into a hole, about five inches deep, at certain distances from each other. Only about one fifth of the seeds sown vegetate; they grow up without any further care, except occasional weeding and manuring.

The leaves are not fit for being plucked till the shrub is three years old. In seven years it rises to a man's height: but as it then bears few leaves, it is cut down to the stem, and this produces a new crop of fresh shoots in the following summer, every one of which bears nearly as many leaves as a whole shrub. It is said that there are three seasons for gathering the tea-leaves; the first is in February or March, when the leaves are small and tender, and not above three or four days old. This is called Imperial tea, being generally reserved for the court and people of rank. The second crop is gathered about the end of March, or beginning of April; at this period part of the leaves have attained their full growth. This gathering is assorted into different parcels, according to the age and size of the leaves. The third gathering is at the end of May, or in the month of June, when the leaves are very numerous and thick, and have all acquired their full growth. This is the coarsest of all the teas. But, however, we do not believe that, even at the present time, the mode of picking, preparing, assorting, and drying the different teas brought to this country is accurately known.

The green tea is, it is said, rubbed in men's hands, in order to roll it into the form in which it is imported; after being rolled it is dried in stoves, or by some other artificial heat.

The following teas are the chief known in the London market:

Black Teas. *Bohea, Congou, Campoi Congou, Ankay Congou, Souchong, Caper Souchong, Padre Souchong, and Pekoe.*

Green Teas. *Singlo, Twankay, Hyson skin, Superior Hyson skin, Hyson, Gunpowder, Chulan Hyson, Ball Tea, and Brush Tea.*

The present annual consumption of tea in the United Kingdom is 20,000,000lbs; in 1716 it did not exceed 300,000lbs. In 1180 there were sold 23,548,468lbs; the sale amount was 3,896,621*l.*, and the duty was 2,766,365*l.* The present duty on teas of every kind is 100 per cent. ad valorem for all sold at the East India Company's sales, above 2s per lb., and 95 per cent. for all sold under that price.

The tea-tree has not been yet cultivated successfully in any part of the world except Japan and China; many efforts have, however, been made to propagate it in various parts of the world. It has latterly been introduced into Brazil, and, according to Mr. Clark Abel, it is cultivated near St. Sebastian with considerable prospect of success. It has been also tried in Europe; and it is conjectured, that, by gradually inuring it to our own climate, by sowing the seeds in the southern parts of the island, that it may ultimately attain sufficient hardiness to resist the cold of our winters. It is, at present, only known here as a green-house plant.

The leaves of various plants have been recommended as substitutes for tea, such as sage, balm, the mints, the whortle-berry, the sloe, &c.; and during the last two years, various persons have been fined heavily for adulterating tea with dried ash, alder, and white thorn leaves. But none of these contain the fragrance, and few, except the sloe, the qualities of the genuine tea-leaves.

Whether tea be injurious or beneficial to the human constitution, is a question which yet appears by no means settled. We cannot, however, avoid thinking, that infusions of all the *black* teas are beneficial, provided *they are* not drunk *too hot;* but we cannot advocate the use of green tea.

Adulterated tea may be detected by an examination of the leaf. The shape of the tea-leaf is slender, the edges are deeply serrated, and the extremity acutely pointed. The texture of it is also very delicate, its surface smooth and glossy, and its colour a lively pale green. The sloe-leaf is more rounded, and obtusely pointed; the serratures, or jags on the edges are not so deep, the surface of the leaf is more uneven, the texture not so delicate, and the colour is a dark olive green. These characters can, of course, only be discovered after the dried leaves have been macerated in water for some hours. The leaves of white-thorn are totally different in shape from the tea-leaf, and on being moistened and spread are easily detected.

As spurious tea has been sometimes made green by an addition of carbonate of copper, to discover the fraud it is only necessary to shake up, in a stopped phial for a few minutes, a tea-spoonful of the suspected leaves, with about two table-spoonfuls of liquid ammonia, diluted with half its bulk of water. The liquor will, if copper be present, exhibit a fine blue colour.

TEA, a meal or refreshment now almost universally taken in this country, some time in the course of the afternoon or evening.

After what we have said under the articles Breakfast, Dinner, and Supper, it can scarcely be necessary for us to enlarge upon this subject; but if *fashion* should deign to listen to our admonitions, then, after a moderate dinner at two o'clock, or earlier in the afternoon, tea may become a more substantial meal at five or six, and our supper, by such a division of the day, be very light, or none at all. At this meal, as well as at all the rest, we would earnestly advise the strictest attention to simplicity. The common practice of taking both tea and coffee at the same time, should be avoided; nor can we commend those cakes called *crumpets*, which are too often introduced at such times: well-baked *muffins*, however, *twenty-four hours old*, are admissible; but dry toast, with a moderate portion of fresh butter is, upon the whole, the best. Rancid or stale butter, and much cream, should be avoided.

TEA, NEW JERSEY, or *Ceanothus*, a genus of plants comprehending five species, scattered over Asia, Africa, and America. Of these, the *Americanus* is chiefly propagated in our own gardens. The stem seldom rises more than three or four feet high. The flowers are terminal, white, and grow in clusters, giving the shrub a beautiful appearance in their season.

TEAK-TREE, or *Tectonia*, a genus of one species, the *grandis*, a native of the East Indies; it grows to a great size, and a vast height; its leaves are opposite, ovate, slightly scolloped, rough above, downy underneath; flowers small, white, fragrant; drupe woolly. The wood of this tree is eminently useful, in India, affording the only timber which the white ant will not touch. The timber of this tree is, in India, what the oak is in England; and like the oak, it is used very generally for ship-building, and all other purposes where a strong and durable wood is required. The growth of the tree is very rapid, and, at all ages, the wood is excellent. It is propagated by seeds. It has been strongly recommended to be cultivated in our West Indian and African settlements.

Teal. See DUCK.

TEARS, the limpid fluid secreted by the lachrymal glands, and flowing on the surface of the eye. The uses of the tears are to moisten the surface of the eye and eyelids, to prevent the pain which would otherwise arise from the motions of the eye; they also wash out and clean away the dust of the atmosphere, or any thing which has fallen into the eye; and in weeping, they appear to relieve the head, by their discharge. See FISTULA.

TEASEL, or *Dipsacus*, a genus of plants consisting of four species, of which two are common to the hedges, and one to the moist wastes of our own country. The *fullonum* is cultivated in the west of England, for the use of the clothier, in raising the knap upon woollen cloth; but it has been gradually sinking into disuse.

TEETH, or *Dentes*, in anatomy, the small bones fixed in the sockets, or alveoli of the upper and under jaw. They are the hardest and whitest of our bones, and at full maturity, we usually find thirty-two in both jaws: sixteen above, and as many below. Their number, indeed, varies in different subjects; but it seldom exceeds thirty-two, and is rarely less than twenty-eight.

Children are generally born without teeth, and for some months after their birth, their gums perform the offices of teeth. The teeth are divided into three kinds, the front teeth are called *incisors*, or cutting teeth; they consist of four in each jaw: these are the first which are seen in the jaws of children.

The canine, or *cuspidati*, are the longest of all the teeth, deriving their name from their resemblance to a dog's tusk. One of these teeth is found on each side of the incisors, so that there are two in each jaw.

The *molares*, or grinders, commonly called double-teeth, are ten in each jaw, and are used by us for the purpose of reducing the food to a suitable state for entering the stomach.

The canine and incisor teeth have only one fang, but the three last grinders in the under jaw, have constantly two fangs, and the same teeth in the upper jaw, three fangs.

The teeth are liable to diseases, the chief of which is a caries, or decay of their substance, commonly called tooth-ach. See TOOTH-ACH, TOOTH-POWDER, the following article, and GUM-BOIL, and GUMS.

Where *artificial* teeth are deemed necessary, they have been recommended to be made from the tooth of the hippopotamus; they should on no account be taken from other persons as infectious diseases have been communicated by such means.

The HORSE has forty teeth when he has completed his full number; the mare usually only thirty-six, being generally without tusks or tushes. They consist of *incisors, cuspidati,* or tusks, and *molares,* or grinders. The horse, like most other quadrupeds, has, during life, two sets of teeth; the first usually appear at the time, or soon after he is foaled; the others appear gradually as the temporary teeth fall out; the change is completed during the fifth year. When, by any accident, one of the *first* set of teeth is displaced, its place is soon filled up by the growing up of one of the permanent teeth. Dealers often take advantage of this circumstance, by drawing some of the colt's teeth to make him appear older than he is, see AGE.

TEETHING, or DENTITION, the breeding or cutting of the teeth. The first dentition begins when the child is about six or seven months, and continues, at uncertain periods, usually till the child is about two years old. The first which appears is generally in the lower jaw, and, of course, an incisor. The canine teeth and grinders, do not appear till about the twentieth, or twenty-fourth month.

These teeth are termed the *primary,* or *milk* teeth, and are twenty in number. About the seventh year they fall out, and are succeeded by others, which remain during life, and are called the *secondary,* or *perennial* teeth. Besides these twenty teeth which succeed the temporary ones, twelve others are afterwards added to make up the number, thirty-two: these are three grinders on each side, in both jaws. The first of these usually passes through the gum about the twelfth year; the second cuts the gum about the seventeenth or eighteenth year, and the third, or *dens sapientiæ,* passes through the gum between the age of twenty and thirty. In some instances, the *dentes sapientiæ* have been cut at the age of forty, fifty, sixty, and even eighty years; and sometimes they do not appear at all. It sometimes, though rarely, happens, that a third set of teeth appears about the age of sixty or seventy.

The danger to which children are exposed during the time of dentition, arises from the pressure of the teeth in the gum, so as to irritate it, and excite pain and inflammation. In such cases, we may sometimes assist nature, by cutting the gum, although by obviating costiveness, and avoiding food which may increase the inflammation, this is not, in general, by any means necessary. In cases of convulsions, arising from teething, the warm bath may be of service; and small doses of rhubarb and magnesia will contribute to remove the irritating acidities in the stomach and bowels. The child may also be permitted to chew the root of liquorice, or marsh mallows, which will, at any rate, engage its attention, and, perhaps, contribute to the protrusion of teeth: of the utility of *coral,* and glass in the shape of coral, for such purpose, we doubt. The solicitous mother need not, however, be under much apprehension for the welfare of the child whilst the fever is moderate, the bowels lax, and the strength not much reduced. But if the fever be great, the bowels constipated, and convulsions threaten, the advice of the physician should at once be had. *Opiates* in dentition, unless there is great debility, and also laxity of the bowels, should be carefully avoided. Magnesia, rhubarb, and chalk, offer more useful assistance. Sometimes, however, opiates with chalk, or magnesia, may be of service, but we fear that the domestic prescriber will not be often equal to such nice discrimination.

A careful attention to what is said under the article INFANCY, will obviate many of the inconveniencies attendant on the dentition of children: for when children are kept in good health, they cut their teeth with comparatively little pain, or disturbance of the functions.

TELEGRAPH, an instrument by means of which information may be almost instantly conveyed to a considerable distance. Telegraphs are of various kinds. We cannot enumerate them. But we may observe, that a *Portable Telegraph* invented by J. CONOLLY, Esq, is described in the *36th Volume of the Transactions of the Society of Arts.* The simplicity, cheapness, and portability of which may render it of use in many cases where telegraphs of a more complicated construction and less portable are not admissible.

TELESCOPE, an optical instrument consisting of a tube with glasses, or reflectors, for viewing distant objects. The term is commonly applied to the larger sizes of the instrument; the smaller kinds are called perspective glasses, spy-glasses, opera-glasses; and a particular kind which is thought much brighter than the rest is called a night-glass.

Telescopes are either refracting or reflecting; the former consists of different lenses through which the objects are seen by rays refracted by them to the eye; and the latter of specula, from which the rays are reflected and pass to the eye. The lens, or glass, turned to the object is called the object-glass, and that next the eye the eye-glass; when the telescope consists of more than two lenses, all but that next the object are called eye-glasses.

The principal effects of telescopes depend upon this maxim, that objects appear larger in proportion to the angles which they subtend at the eye; and the effect is the same whether the pencil or rays, by which objects are visible to us, come directly from the objects themselves, or from any place near to the eye, where they may have been united so as to form an image of the object; because they issue again from those points in certain directions, in the same manner as they did from the points in the objects themselves.

Galileo, having made many improvements in the telescope, has by some been considered as the inventor; but he himself acknowledges that he first heard of the instrument from a German. The honour of explaining the principles of the telescope is due to Kepler.

Notwithstanding the various improvements in refracting telescopes, since the time of Kepler, the discovery of the reflecting telescope has considerably diminished their value; for a refracting telescope of 1000 feet focus, even supposing it possible to be made use of, could not be made to magnify with distinctness more than 1000 times; whereas a reflecting telescope, not exceeding nine or ten feet in length, will magnify 1200 times. Mr. James Gregory, of Aberdeen, was the inventor of this instrument, but his construction is quite different from Sir Isaac Newton's, and not nearly so advantageous.

But the reflecting telescopes of Sir W. Herschel surpass all others. He has made them from 7, 10, 20, to even 40 feet in length. To describe these instruments would far exceed our limits, but we may mention that the concave face of the metallic mirror of Sir William's largest telescope, which is fixed at the bottom of a forty feet tube of iron, is forty-eight inches of polished surface in diameter. The thickness, which is equal in every part of it, is about three inches and a half; and its weight, when it came from the cast, was 2118lbs., of which it must have lost a small quantity in the polishing. The metal is a mixture, supposed to be composed of 32 parts of copper, 15 of tin, 1 of brass, 1 of silver, and 1 of arsenic: for Sir W. has not made the composition public; but Mr. Edwards, an intimate friend of his, after repeated trials, found these proportions the best for receiving a fine polish, and producing the most perfect reflection. This intrument, with proper eye-glasses, magnifies above 6000 times, and is said to be the largest that ever was made.

The late **Earl Stanhope**, projected, and in part carried into effect, the construction of a reflecting telescope, which was to have been three hundred and eighty-four feet in length. and the reflectors six feet in diameter! a particular account of this telescope is given by Mr. **Varley**, in the first and second numbers of the *London Journal of Arts and Sciences*, to which we must refer the reader for more minute particulars.

TELLIRA, a genus of testaceous bivalve worms consisting of ninety-four species, scattered through the seas of the globe, chiefly in the Indian ocean; nineteen or twenty common to our own coasts. They are thus subdivided :— ovate and thickish, — ovate compressed,—suborbicular. Some of these resemble a solen, others a venus. The *reticulata* resembles the leaves of the duckweed. They are of very different sizes, from that of a pea to the breadth of four inches. The *remies*, one of the largest, is about three inches long, and three and a half broad; it inhabits the Indian and American oceans.

TELLURIUM, a metal of a bright grey colour, brittle, easily fusible, and very volatile. Its specific gravity is 6·1.

The ores of tellurium are either *native*, in which the metal is combined with iron and a little gold; *graphic ore*, which consists of tellurium, gold, and silver; *yellow ore*, a compound of tellurium, gold, lead, and silver; or *black ore*, consisting of the same metals with copper and sulphur. These ores have only been found in the Transylvanian mines, and in Siberia; the metal is extracted from them by precipitating their diluted nitro-muriatic solution by potash, which is added in excess. The clear liquor is poured off and saturated with muriatic acid, which affords a precipitate of oxide of tellurium; this heated in a glass retort with charcoal, furnishes the metal.

Exposed to heat and air, tellurium readily burns, exhaling a peculiar odour, and forming a yellowish white oxide; this combines with many of the metallic oxides, acting the part of an acid, and producing a class of compounds called *tellurates*.

The oxide of tellurium is readily soluble in muriatic, nitric, and sulphuric acids.

Tellurium combines with iodine, chlorine, and various other bodies. It has not, however, been made use of either in the metallic, or in any other state,

TEMPER, a particular disposition of the mind. See **Disposition**, and the next article.

TEMPERAMENT, in medicine and physiology, a term given to certain physical or moral differences which are observed in man.

Much has been said and written of the different temperaments; and they have been most commonly arranged under the *sanguineous*, the *phlegmatic*, the *choleric*, and the *melancholic*; but they are, in truth, as various as the different habits and manners of men; and cannot, with any degree of propriety, be arranged under such arbitrary heads. But whatever may be the physical differences in the temperament of different individuals, the moral difference is still of much greater importance, and hence the almost omnipotent power of circumstances, in the formation of the human character. See **Circumstances**, **Education**, **Mind**, &c.

Temperance. See **Appetite**, **Breakfast**, **Drink**, **Drunkenness**, &c.

Temperature. See **Climate**, **Cold**, **Heat**, and **Thermometer**.

Tempering. See **Steel**.

Temptation, in morals. See **Motive**, and **Occasion**.

Tench. See **Carp**.

TENDON, in anatomy, the white and glistening extremity of a muscle. See **Muscle**. The tendons are sometimes diseased. See **Ganglion**.

TENDRIL, **Clasper**, or *Cirrus*, in botany, a filiform spiral band, by which a plant is fastened to another body, or by which a weak plant supports itself on others; tendrils are seen on the vine, the pea, &c.

TENESMUS, a continual inclination to go to stool, without any discharge, or with a trifling one of mucus. This complaint, for complaint it often is, and sometimes not a little distressing, very commonly attends the piles. especially those called the blind piles. The same means must, however, be adopted for its cure, as are recommended under piles, which see.

TERMES, a genus of insects comprehending ten species, distinguished by a mouth with horny jaws, lip horny; feelers four, filiform; eyes two. They are subdivided into,—antennas filiform, —antennas setaceous; the following are the chief: the first three belong to the first division; the four others to the last.

The *Fatale*, or White ant, has the body above brown, thorax with three segments, wings pale, with a testaceous rib. The animals of this extraordinary community, far exceeding, in wisdom or policy, the bee, ant, or beaver, are inhabitants of India, Africa, and South America. They build pyramidal structures, ten or twelve feet in height, and divided into appropriate apartments, magazines for provisions, arched chambers, and galleries of communication. They are so firmly cemented that they easily bear four men to stand upon them: and in various parts of Africa appear like villages of the natives. They are very destructive to food, furniture, books, clothes, and timber of whatever magnitude. The only timber which they will not touch is teak. See TEAK. The order and arrangement in the community of these animals are truly surprising; the female, when impregnated, is of an amazing bulk; she lays about eight thousand eggs in twenty-four hours.

The *Destructor* has the body above testaceous, head black; antennas yellow; inhabits America, India, and Africa; resembles the preceding in manners, and is about half its size. The *arda*, is black, and resembles, in its economy, the white ant; inhabits Sierra Leone.

The *Capense* is pale yellow, inhabits India and America. The *pulsatorium*, or Tick-watch, inhabits Europe and America. See DEATH WATCH. The *fatidicum*, inhabits Europe, and resembles the last, but a little larger. The *divinatorium* is found in books, and is extremely active.

TERN, or *Sterna*, a genus of birds comprising twenty-five species, scattered over the globe, four of them common to our own country. They are distinguished by a subulate, straitish, pointed bill; wings very long; tail mostly forked; they are clamorous and gregarious, assembling in large flocks; with us they are migratory, leaving our shores regularly on the approach of winter; the following are specimens:

The *Hirundo*, or Greater tern, has the two outer tail feathers half black and half white; another variety with these feathers entirely white, and black legs, back grey; breast pure white, elegantly contrasted with a large black spot upon the crown of the head, resembling a hat; bill and legs red; length thirteen inches; it is of a slender but elegant form, and has, altogether, most beautiful plumage; this bird is the most active fisher of all the aquatic tribe. The eggs are laid in the sand, and the hatching is often accomplished by the heat of the sun, without much attention of the female. This species is observed in abundance on the small islands adjacent to the Canaries.

The *Minuta*, or Smaller tern, and the *fissipes*, inhabiting Europe and America; the *cantiaca* a beautiful bird, sometimes seen on the Kentish coast; and the *stolida*, or Noddy, which has the body black, and is fifteen inches long, inhabiting chiefly within the tropics, are all we can notice.

TERRA DE SIENNA, a brown bole, or ochre, brought from Sienna, in Italy, and used in painting in its crude state when powdered, and also when burnt. It is used chiefly ground in oil, for giving the dark shading to colours in imitation of mahogany.

Terror. See FEAR.

Tertian. See AGUE.

TEST, in chemistry, that substance whether solid, fluid, or gaseous, which, when mixed with or dissolved in another body, indicates the presence of some certain body, if there, in consequence of the peculiar appearance or properties which such mixture or solution assumes.

Tests are of various kinds: *Infusion of galls*, see GALLS; *Hydrosulphuret of ammonia*, see HYDROSULPHURETS; *Litmus*, see LITMUS; *Oxalate of ammonia*, see OXALIC ACID; and *Ammonia*, see COPPER; are useful and important tests.

Testimony. See EVIDENCE.

TETANUS, a spasmodic disease, characterized by rigidity of almost the whole body. Sometimes the body is thrown back by spasmodic contractions of the muscles; and sometimes it is bent forwards; at other times the disease is chiefly distinguished by what is commonly termed a *locked jaw.* These affections arise more frequently in warm climates than in cold ones, and are very apt to occur when much rain or moisture quickly succeeds excessively dry and sultry weather. They attack persons of all ages, sexes, temperaments, and complexions, but the male sex more frequently than the female, and those of a robust and vigorous constitution than those of a weak habit. This disease is sometimes symptomatic of syphilis and worms.

These complaints are either produced by exposure to cold, or by some irritation of the nerves in consequence of a local injury by puncture, incision, or laceration. Lacerated wounds in tendinous parts prove, in warm climates, a never failing source of these complaints; and in cold climates, as well as in warm ones, a locked jaw frequently arises from the amputation of a limb.

When the disease arises in consequence of any external injury, the symptoms show themselves generally about the eighth day; but when it proceeds from exposure to cold, usually much sooner. In some cases it comes on suddenly and with great violence, but more commonly its attack is in a gradual manner. It is seldom attended with any fever, but always with violent pain; the spasms are not, however, constant; the contraction of the muscles remitting, and is renewed every ten or fifteen minutes, especially if the patient make the least attempt to speak, drink, or alter his position.

As this disease is always attended with great danger, the best medical advice should be at once obtained. But any local irritation which may appear to have excited it, should be removed as soon as possible; such as splinters of wood, nails, or any other substance in the flesh; and, in the absence of a medical attendant, the bowels may be relaxed by purgatives; if they cannot be given by the mouth they should be thrown up in a clyster; *opiates* may also be given; bleeding and the warm bath in cold climates, have also been recommended; and where no other aliment can be taken, wine may be administered, or beef-tea.

TETTER, or *Herpes,* a genus of troublesome diseases, affecting the skin on various parts of the body.

It has been distinguished into the *dry tetter,* which appears indiscriminately in different parts of the body but most commonly on the face, neck, arms, and wrists, in broad spots and small pimples; after continuing a certain time they fall off in the form of a white powder, similar to fine bran, leaving the skin below perfectly sound; and again returning in the form of a red efflorescence, they fall off and are renewed as before. Another kind appears in the form of pustules, which appear first separate and distinct, but afterwards run together in clusters; they at first contain a thin watery serum, which afterwards turns yellow, and extending over the whole surface of the part affected, dries into a thick crust or scab; when this falls off, the skin below generally appears entire. This species appears most frequently on the face, behind the ears, and on other parts of the face; and it occurs most commonly in children. The *miliary tetter* breaks out indiscriminately over the whole body; but more frequently about the loins, breast, perinæum, scrotum, and groin, than in other parts. It generally appears in clusters, though sometimes in distinct rings or circles of very minute pimples, resembling millet seed, whence the specific name has been given to it. The pimples are at first, though small, perfectly separate, and contain nothing but a clear lymph, which in the course of the disease is excreted upon the surface, and there forms small distinct scales; these at last fall off, and leave a considerable degree of inflammation below that still continues to exude fresh matter, which dries into scabs as before. The itching in this complaint is always very troublesome, and the matter discharged from the pimples is very tough and viscid. The *eating* and *corroding tetter,* is so called from its destroying or corroding the parts which it attacks. It appears, at first, in the form of several small painful ulcerations, all collected in larger spots of different sizes and of various figures, with always more or less of an erysipelatous inflammation. These ulcers discharge a thin, sharp, serous matter, which sometimes forms crusts, which fall off in a short time; but most frequently the discharge is so thin and acrid, as to spread along the neighbouring parts, where it soon produces the same kind of sores; they do not in general proceed farther than the true skin; but sometimes they destroy, not only the skin, but the cellular substance, and even the muscles themselves.

The cure of these different kinds of tetters, depends upon a great variety of circumstances, to which it will be necessary to attend. They are sometimes constitutional, and in such cases are with great difficulty, if ever, removed. In the cure of tetters, as indeed in the cure of, or removal of most complaints of the skin, where the disease appears to be constitutional and spread over a large surface, repellents should be most carefully avoided. Tar ointment with calomel, as described under *tar,* offers, perhaps, one of the best, although not the most elegant mercurial remedies for the cure of such complaints. The itching will, most probably, be best relieved by simple ablution with warm water. If any of these eruptions proceed from irregularities in food, or in a disorder of the digestive functions, of course attention should be paid to these circumstances; nor is attention to the state of the bowels of trifling consideration. But, unquestionably, frequent ablutions of the skin with warm water or soap and water, will be necessary; although, in some of these complaints, and in some habits, *yellow* soap is manifestly mischievous, and must be avoided. With the same intention, the warm bath may also be had recourse to. Various other remedies, as well as quack medicines, have been recommended for this complaint; the chief will be found under our article LEPROSY, to which therefore we refer.

TETTER, in farriery, called by farriers the flying ring-worm, or ring-worm, is a disease of the skin, which runs up and down in different directions; it is most commonly found on the rump; it differs, however, but little from the mange, and is to be cured by similar means.

THEATRE, a place in which shows or dramatic representations are exhibited.

Of the impropriety of dramatic representations, as at present conducted, there cannot, we presume, be two opinions. A great and promiscuous assemblage of all kinds of persons, whose right to admision consists simply in the ability to pay, must necessarily contain, in all populous towns, many whose morals and character are not of the best kind; and, whilst mammon and self-interest only interfere in thus amusing the public, these kind of theatrical exhibitions will, most probably, continue. But, whilst we enter our protest against *such* theatres, we would by no means be understood as objecting to all theatrical exhibitions, when suitably conducted, and when those pieces only are performed

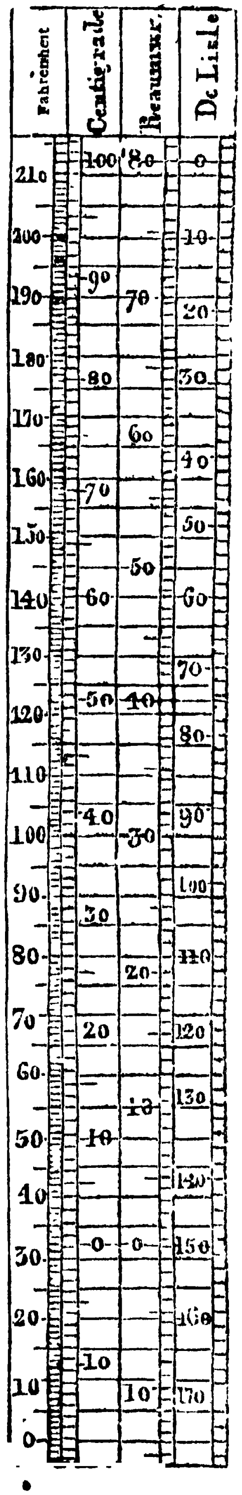
> Which wake the soul by tender strokes of art,
> Which raise the genius, and which mend the
> heart;
> Which make mankind in conscious virtue bold,
> Live o'er each scene, and be what they behold.

Nor do we think it would be difficult to suggest arrangements by which our theatres may be made equally as amusing as they are at present, without holding forth that encouragement to vice which it is now admitted they too commonly do. But to this end it appears to us indisputably clear, that *no money* should be received for admission; and that instead of three or four, or even ten theatres in this vast metropolis, if a theatre were established in every district or parish, consisting of about one thousand inhabitants, it may be made the most effectual engine of moral and scientific instruction, as well as rational amusement. We have at present, in this city, something similar in the lectures which are given at our different literary institutions; the admission to the theatres might be exactly upon the plan of these; and, besides occasional moral and scientific lectures, the recitation of new productions, and chaste theatrical performances may, with the agreeable intervention of music, to which we see no kind of objection, form a variety for the amusement and instruction of five hundred or more persons, who would be, generally, *known to each other*, that could not fail to have a great and a lasting effect upon the habits and manners of society: and, as admission to such a place would often be a matter of favour, it would, on this account, be much more esteemed.

It is not consistent with our limits to enter into the detail of such a mode of amusement and instruction, but we cannot avoid thinking that it is deserving the consideration of all who are seriously concerned in the *national education* of the people; and that till some such methods of instruction are adopted, both for the *young* and *adult*, besides those already in action, or projected for the *young* only, we shall be obliged to behold great numbers of the population the patient victims of error, of misery, and of crime. See EDUCATION, and SCHOOL.

THERMOMETER, an instrument for ascertaining the degree of heat or cold in any body.

A common thermometer consists of a glass tube, terminated at one end by a bulb, and closed at the other. The bulb, and part of the tube, are filled with a proper liquid, generally mercury, and a scale is applied, graduated into equal parts. Whenever this instrument is applied to bodies of the same temperature, the mercury, being similarly expanded, indicates the same degree of heat. In dividing the scale of the thermometer, the two fixed points usually resorted to, are the freezing and boiling points of water, which always take place at the same temperature, when under the same atmospheric pressure. The intermediate part of the scale is divided into any convenient number of degrees; and it is obvious that all thermometers thus constructed will indicate the same degree of heat when exposed to the same temperature. In the *centigrade* thermometer this space is divided into 100°; the freezing of water being marked 0°. the boiling point 100°. In this country we use *Fahrenheit's* scale, of which the 0° is placed at 32° below the freezing of water, which, therefore, is marked 32°, and the boiling point 212°, the intermediate space being divided into 180°. Another scale is *Reaumur's*, the freezing point of which being 0°, the boiling point 80°. These are the principal thermometers used in Europe; there is, however, another, called *De Lisle's*, in which the graduation commences with the boiling point which is marked 0°, and the freezing is 150°.



The annexed is a comparative table of the different thermometrical scales.

Each degree of Fahrenheit's scale is equal to 4/9ths of a degree on Reaumer's; if, therefore, the number of degrees on Fahrenheit's scale, above or below the freezing point of water, be multiplied by 4, and divided by 9, the quotient will be the corresponding degree of Reaumur.

To reduce the degrees of Reaumur

to those of Fahrenheit, they are to be multiplied by 9, and divided by 4.

Every degree of Fahrenheit is equal to $\frac{5}{9}$ths of a degree on the centigrade scale. The same method must be adopted in reducing these respectively as is directed in the preceding paragraphs relative to Reaumur's thermometer, using, of course, 5 and 9 as multipliers and divisors.

When a thermometer is intended to measure very low temperatures, spirit of wine is employed in its construction, as that fluid has never been known to freeze; whereas the low temperature at which it boils renders it unfit for measuring high temperatures. Quicksilver will indicate the degree of 500 of Fahrenheit, but freezes at 40° below 0°. For measuring intense degrees of heat, an instrument has been contrived called a Pyrometer. See **PYROMETER.** Air is sometimes resorted to as indicating very small changes of temperature; and of air thermometers, that described by Professor Leslie, under the name of the *Differential thermometer,* is the best. It consists of two large bulbs containing air, united by a tube twice bent at right angles, containing coloured sulphuric acid. When a hot body approaches one of the bulbs it drives the fluid towards the other. The great advantage of this instrument in delicate experiments is, that general changes of the atmosphere's temperature do not affect it, but it only indicates the difference of temperature between the two balls. See **CLIMATE, COLD,** and **HEAT.**

THIGH, in anatomy, that part of the lower limb which is situated between the pelvis and the knee. The bone of the thigh is called *femur*; it is liable to dislocations and fractures, for the treatment of which see **DISLOCATION** and **FRACTURE.**

Thinking. See **MIND.**

THIRST, that uneasy sensation experienced in the mouth and fauces, inducing a desire to drink.

Thirst appears to be produced by a deficiency of secreted fluids in the salival glands, and, most probably, also in the stomach. This deficiency may arise from various causes. In a state of health and vigorous muscular exertion, particularly in warm weather, the perspiration, both sensible and insensible, is great; and hence, in general, a large portion of drink, the desire for which is evinced by the sensation of thirst, becomes necessary to supply the waste. And where the body is not unusually hot, nor much exhausted by fatigue or labour, the best liquid for the quenching of thirst under such circumstances, is, undoubtedly, cold water. But if the body be much heated or fatigued, cold water will be improper; wine and water, or weak spirit and water, will be then proper.

Besides the thirst arising naturally when in health, from mere exertion, from depletion, or from omission to take the usual quantity of fluid at any meal, thirst may be produced artificially, as is well known by eating salted provisions; in which case water is also the best remedy for it; it is also frequently produced by habitual intoxication; but if we are to judge by the practice of mankind under these circumstances, water would not seem to be the best remedy for such thirst. We cannot, however, doubt that the state of the stomach of the habitual drunkard is greatly depraved. See **DRINK.**

The morbid thirst attendant upon febrile and inflammatory diseases, is usually accompanied with a sense of increased heat, and will often be best alleviated by acids, cool air, sudorifics, purgatives, or blood letting; means which are not necessary in natural thirst, and hence we may suspect that they are not produced by the same causes.

For the treatment of persons who are labouring under disease, in consequence of drinking cold water when the body is hot, see **DRINKING COLD WATER.**

In addition to what we have said under the article **HUNGER,** relative to the mode of treatment of persons who have been a long time deprived of food and drink, it should be strongly impressed upon the reader that large draughts of cold water, under such circumstances, are highly dangerous; that the best drink is weak wine and water, in small quantities at a time, the quantity of the wine being gradually increased. See HUNGER.

THISTLE, or *Carduus,* a genus of plants, comprehending thirty-six species, scattered over the globe; the greater part natives of the South of Europe. They may be sub-arranged into two divisions: those with decurrent leaves, and those with sessile leaves. Several of the species are common to our own country, and especially the *lanceolatus,* the *nutans,* the *tenuifolius,* the *acanthoides,* and the *marianus,* or Milk thistle; all found on wastes and commons; the last has been occasionally used medicinally: there are several varieties, some with, and some without, spines. The green herb of this last species is chiefly used as food for tame rabbits, of which they are extremely fond. The *lanceolatus,* Spear thistle, or Bull thistle, is a biennial plant, which is most easily destroyed as a weed, by simply cutting it up by the roots. A good husbandman will never suffer such plants to grow up and produce seeds.

THISTLE, the BLESSED, CARDUUS BENEDICTUS, or *Centauria benedicta,* an annual plant, a native of Spain and the Grecian islands; flowering in June and September; and cultivated in the gardens of this country, where it thrives as well as in its native soil. It is in the greatest perfection when in flower, at which time it should be cut, quickly dried, and preserved in a dry place. It is emetic, diaphoretic, or tonic, according to the form and strength of the preparation in which it is administered. A decoction and strong infusion produce vomiting; a less strong warm infusion produces copious perspiration; and a light infusion, made with six drachms of the leaves and one pint of cold water, is an elegant and efficacious bitter in dyspepsia. It is, however, seldom ordered in modern medical practice. The dose of the powdered herb is, from fifteen grains to one drachm; of the infusion, two fluidounces every three hours.

Thistle, Carline. See CARLINE THISTLE.

THISTLE, the COMMON, or *Serratula arvensis,* is a plant with a perennial root, and very frequent in all kinds of lands, not excepting the richest pastures. It is extremely injurious to all crops; and is for a time repressed rather than destroyed, by a well-conducted summer fallow; but this is only a local remedy; for its numerous seeds, which are feathered, will often come from a considerable distance, and replenish the field which has been cleared of it. It is frequently cut close above the ground by means of a simple instrument, called a weed hook; but it is done much more effectually, either by the hand, or by means of a pair of forceps or nippers, with two long handles, by which the whole, or part, of the roots are pulled up, and the plants either weakened or totally destroyed. In Derbyshire they make use of a species of tongs, or pincers, with fluted jaws, which are said to be peculiarly effectual. In the lowland rich pastures of Somersetshire, these thistles are *skirred* two or three times, in the course of the summer, with the scythe, and suffered, generally, to remain on the land; when dry they are frequently eaten by cattle. No other method is there usually taken to keep them under; they were formerly pulled in Scotland and given to horses. In Germany, it is said that, after they are collected, they are beaten in sacks till their prickles are destroyed; after which horses devour them greedily.

Thistle, the globe. See GLOBE THISTLE.

Thistle, Sow's. See SOW THISTLE.

THORACIC DUCT, in anatomy, the trunk of the absorbents, of a serpentine form, and about the diameter of a crow quill. It lies upon the dorsal vertebræ, between the aorta and vena azygos, and extends from the posterior opening of the diaphragm to the angle formed by the union of the left subclavian and jugular veins, into which it opens and evacuates its contents, there to be mixed with the blood, and which are secreted for the nourishment of the whole system. In its course the thoracic duct receives the absorbent vessels from almost every part of the body. See Anatomy and Digestion.

THORAX, the chest; that part of the body situated between the neck and the abdomen; the external parts of the thorax are the common integuments, the breasts, various muscles, and the bones of the thorax, consisting of the ribs, sternum, vertebræ, clavicles, &c. The parts within the cavity of the thorax, are the pleura and its productions, the lungs, the heart, thymus gland, œsophagus, thoracic duct, arch of the aorta, part of the vena cava, vena azygos, the eighth pair of nerves, and part of the great intercortal nerve; the thorax is separated from the abdominal viscera by the diaphragm, and into two parts by the mediastinum. See Heart, Lungs, &c. in the order of the alphabet.

THORN, or Spine, in botany, a sharp process from the woody and other parts of plants. In trees it commonly disappears upon culture, as in the pear, orange, &c.

THORN, or *Cratægus*, a genus of plants consisting of between twenty and thirty species, including the various kinds of medlar. The following are the chief:

The *Oxyacantha*, Common hawthorn, or White thorn, too well known to need description. The trunk and branches of this tree are beset with sharp thorns; flowers white, fragrant, appearing in May, and often called *may*; they are succeeded in autumn by bunches of dark red berries, which afford food to birds, pigs, &c. There are several varieties: some with large, oblong, scarlet fruit; with fruit of a golden colour, called haws; with white berries, and darker blossom; and also the *Glastonbury thorn*, which blossoms early, sometimes at Christmas; many superstitious stories are told of this last; some of which are mentioned in Drayton's Polyolbion. A native of this country.

The *Torminalis*, Wild service, Sorb, or Maple-leaved service, rises to the height of forty or fifty feet, with a large spreading trunk, and alternate leaves, cut into many acute angles, like maple leaves; they are about four inches long, and three broad; flowers white, shaped like the pear-tree, but smaller; fruit like the preceding, but larger, and of a brown colour; if kept till soft, like the medlar, it has an agreeable flavour. The wood of this tree is useful for many purposes. The fruit is sold in the London markets in the autumn. A native of various parts of Europe, and also of England.

The *Aria*, or White beam tree, is also a tree of considerable height, flowering in May. A native of various parts of Europe, and also of this country; the wood is hard and tough, and used for axles, &c. Fruit eatable, when mellowed by frosts. It is also an ornamental tree, and desirable to be mixed in plantations.

The *Coccinea*, or Great American hawthorn, a native of Virginia; the *viridis*, or Green-leaved American hawthorn; the *crus galli*, or Cockspur hawthorn; and the *pyracantha*, or Evergreen thorn, may also be mentioned.

All the different sorts may be increased with facility, by sowing the seeds in the open ground, either in the autumn or spring months, in drills or broadcast, covering them to the depth of about an inch. The haws may be gathered in the hedges in many of the sorts, and others procured from the nurserymen. The plants mostly appear in about twelve months; they should be kept clean from weeds, and be occasionally watered in dry weather. When one or two years old, they may, in most of the sorts, be removed into nursery rows, at the distance of from eight inches to two feet asunder, according to the sorts, and from six inches to a foot in the rows, there to remain for the purpose of forming hedges, &c. having the tops, shoots, and other parts, cut and pruned as there may be occasion.

The common white thorn, so useful for hedges, may be raised from the roots cut off from the young plants, as well as from the seeds. Indeed, this plant is preferable to every other for a fence, and when properly trained and kept down, will continue for an unlimited period. In planting these hedges, the plants should be, at least, five years old; and it is by no means advisable to mix other kinds of plants or shrubs with them, they forming the best fence when growing alone. They should also be planted in the natural soil; in wet soils they should be planted in a bank of earth. Some choose to plant a double row of plants, one row from nine to fifteen inches from the other, but if the plants be vigorous and healthy, this is by no means necessary. The hedges formed of the thorn have been frequently called *quick-set.*

For the other important species of this genus, see MEDLAR.

THORN-APPLE, or *Datura,* a genus of plants, consisting of seven species, scattered over the globe, of which the chief are the *stramonium,* or Common thorn-apple, an annual plant, a native of America, but is now naturalized to this country, and found growing on dung-hills and road sides from the fruit ejected from gardens, and flowering in July and August. It rises about two feet in height, with a round, branching, leafy stem; the leaves are dark green above, beneath pale. The flowers are generally white, but have sometimes a tinge of purple or violet; they consist of one large funnel-shaped petal, succeeded by large, oblong, roundish capsules, about the size of a walnut, with the outer covering closely beset with sharp spines, which constitute what is called the thorn-apple; they contain a great number of reniform compressed seeds. The leaves, capsule, and seeds, are used medicinally. The *arborea,* is a tall tree of Peru, with glabrous leaves, glabrous nodding pericarps without spines, and large fragrant flowers.

The *stramonium,* under which name the first described species is most usually known, has been long considered an *acrid narcotic poison.* See POISON. But latterly it has been used with advantage in several diseases. Cataplasms of the bruised fresh leaves have afforded relief in inflammatory tumours, and for discussing masses of indurated milk in the breasts of nurses; and, it is said, that an ointment made with the powdered leaves, allays the pain of hæmorrhoids; smoking the dried leaves in the manner of tobacco, has afforded relief in the paroxysm of spasmodic asthma. The inspissated expressed juice of the leaves, has been also occasionally given internally; and an extract of the seeds has been lately recommended in severe chronic pains; the dose of this last should be only from one-fourth of a grain to a grain only, twice a day; some however, recommend its being increased gradually, until twelve grains are taken in twenty-four hours; the *exhibition of this medicine requires the greatest caution.*

Thornback. See RAY.

Thorough wax. See HART WORT.

Thought. See MIND.

THORTER ILL, a paralytic disorder incident to sheep. It is said to arise sometimes from their eating some poisonous or narcotic plant; more frequently, perhaps, it depends on general weakness from insufficient food; a nourishing diet, and cordials are the best remedy.

THRESHING, or THRASHING, in agriculture, the operation by which corn is separated from the straw. This operation is performed in this country in two ways; by the flail and by a machine. In some other countries, and in warmer climates, it is performed by the feet of animals.

The common flail is too well known to need description; threshing with this simple instrument is a severe and irksome labour, and, to the farmer, exceedingly expensive; the waste of grain is also great; and few labourers can be found who will thresh the corn wholly out of the straw; nor is this to be wondered at: few men are dexterous at handling a flail; and labourers, in general, would rather work without doors, even in wet weather, than subject themselves to the severe, dusty, monotonous, and unwholesome toils of a barn.

Three sorts of machines have been invented for the purposes of *threshing and cleaning corn:* these are, a threshing machine; a machine for dressing barley; and fanners, or winnowing machines.

The threshing machine is considered the most valuable implement that modern times have produced; the saving of manual labour, and that of a severe kind by means of this invention, is, perhaps, beyond calculation, while the grain is separated from the straw in a more perfect and expeditious manner than has hitherto been accomplished by any other mode. It is to the ingenuity of a Scotch mechanic, ANDREW MEIKLE, that we are indebted for the perfection, if not the sole invention, of the most valuable threshing machine; to him, at any rate, must be attributed the merit of suggesting the drum with fixed beaters, by which the corn and straw are separated in the most perfect manner; in other attempts to construct this implement, the plan of the flax mill had been adopted. A threshing machine invented by Mr. LEE, and described in the Transactions of the Society of Arts, is also highly spoken of; another by R. TAWNEY, Esq. is described in the Pantologia.

Threshing mills, or machines, are driven by various powers: by horses; by oxen; by wind alone; by wind, or cattle when the wind fails; by water alone, or by cattle when water is deficient; and by steam. Some machines are driven by manual labour; and they may be adequate to thresh the crops grown on small farms, by introducing only the head of the grain into the machine; but even in that case, a moderate-sized horse or ox; or water or wind, would be a better power. On the whole it is most advisable to have these machines of a substantial construction. A six-horse power is little enough for all the necessary operations of a corn farm; though, by shortening the drum, fewer horses may be used.

The specific advantages resulting from the use of the threshing machine, are these: one-twentieth part more of corn is obtained from the same quantity of straw than by threshing with the flail;—the work is done much more expeditiously;— pilfering is avoided;—the grain is less subject to injury;—seed corn can be procured without difficulty from the new crops for those to be sown;—the market may be supplied with grain more quickly in times of scarcity;—the straw softened by the mill is more useful for feeding cattle; if a stack of corn be heated it may be threshed in a day, and the grain preserved from injury; the threshing mill also lessens the injury from smutty grain, the balls of smut not being broken as when beaten by the flail;—by the same machine the grain may be separated from the chaff and small seeds, as well as from the straw; and the great drudgery of manual labour, in threshing by the flail, is completely superseded.

In the western districts of England as the farmer is desirous of extracting the grain with as little injury as possible to the straw, the ears are cut off and threshed separately from it; the straw is converted into a species of reed, for thatching, for litter, or for making bands for tying up the sheaves of the ensuing harvest. For this operation, a small threshing mill, invented by Mr. W. Johnson, of Langholme, in Dumfries-shire, has been recommended; and, indeed, is more likely to be adopted in foreign countries, than the larger machines.

A machine has been invented for dressing, or taking off the ears of barley, which is recommended as a great improvement, by those who have used it. Sometimes, it is attached to threshing-mills, and though there must be some additional stress to the power by which it is moved, it is but trifling: in well-constructed threshing-mills, this operation is frequently done by the mill itself.

Many imperfect modes were used formerly for separating the grain from the chaff; as, by dropping it from a sieve, or basket, between the doors of a barn exposed to the wind; or by dropping it from any elevated platform, or waggon, in a situation exposed to an open current of air, before any winnowing machine was invented. But by the use of fanners, the husbandman can clean his corn at any time when necessary. Fanners have been greatly improved since their first introduction; and are now to be seen not only in every corn-mill, but almost in every barn where the farm is more employed in tillage than in grazing. When annexed to threshing-mills, and properly fitted up internally, with suitable riddles and harps, corn is often rendered fit for the market as it comes from the machine.

Threshing-floor. See BARN.

Thrift. See LAVENDER, the SEA.

THRINCIA, or SMALL JAMAICA FAN-PALM, in botany, a genus consisting of one species only, a West Indian palm, rising from ten to twenty feet high; its fronds are fan-shaped, palmate, plaited with lanceolate rigid segments; the stalks unarmed, longer than the leaves. It is now cultivated in Kew gardens.

THRIPS, a genus of insects consisting of eight species, so minute that they are not readily distinguished without a microscope. They reside most commonly on flowers, and under the bark of trees; one, the *junipera*, is found on the juniper-tree; the thorax and abdomen are black; the elytra white. Another, the *physapus* has a black body and glaucous wings; it is found in our own country, in the spikes of wheat and rye, to which it is very destructive.

Throat. See FAUCES, LARYNX, ŒSOPHAGUS, SORE-THROAT, TONSILS, TRACHEA, &c.

THROAT-WORT, or TRACHELIUM, is a genus of plants consisting of three species, two natives of the Cape, one of Italy and the East; this last, the *cæruleum*, or Blue throat-wort, is cultivated as an ornament to rock-works, and other situations where the earth is poor. It is a biennial with a tuberous root, and a stalk rising a foot and a half high; flowers small, azure blue, appearing in June and July. It may be easily raised from seeds sown in the autumn, in a bed or border of light mould.

For another throat-wort, see BELL-FLOWER.

THRUSH, or *Turdus*, a genus of birds comprising one hundred and thirty-six species, scattered over the globe, of which seven are inhabitants of our own country. Under this numerous tribe are comprehended, the missel, fieldfare, the throstle, or mavis, the redwing, the blackbird, the ring and water ouzel; together with a vast crowd of foreign birds. They are distinguished by having the outer toe connected with the middle by a membrane as far as the first joint; the bill is denticulated towards the point; the male and female are nearly the same size; they are generally subject to a variation of colour in different seasons of the year. They are perfectly baccivorous; but to this food they add insects and worms; none of them feed upon grains. The following are the chief.

The *Viscivorus*, Missel, or Missel-bird, has the back brown, neck spotted with white; bill yellowish; eleven inches long; builds in bushes, or in the side of some tree, and lays four or five eggs; sings finely in the spring, sitting on the summit of a tree. This bird is peculiarly distinguished, as being the largest British bird which has any harmony in its voice. It feeds upon holly and miseltoe berries, and insects, and may be regarded as sovereign of the grove, driving away from the coppice all the inferior species of the thrush kind.

The *Musicus*, Song thrush, or Throstle, has the head, back, and upper coverts of the wings, deep olive brown; throat mottled with brown and white; belly and breast pale yellow, with large black spots; inhabits the woods of Europe; builds in a low bush, or in an ivied tree, a nest of moss and straw, plastered within with a whitish substance, most like decayed wood, cemented with some glutinous matter lays in this country, generally, five pai blue eggs, with blackish spots; France, migratory, but remains in England during the whole year; remarkably prolific, producing in some countries, three different families in a sea son; of all the tribe, this is the most accomplished singer, and it sings also at various seasons of the year; found in Scotland, England, France, Germany, and Sweden; nine inches long; flesh generally good; it was formerly in great request with the Romans; several varieties in Europe; three or four in America. This, as well as the whole tribe, is a very useful bird in the destruction of snails and other injurious animals, it should, therefore, never be destroyed.

The *Pilaris*, or Fieldfare, has the tail feathers black, the outermost at the inner edge tipped with white; head and rump hoary. Three or four other varieties. They visit this country in large flocks about Michaelmas, and leave it about March. Their summer residence is Syria, Siberia, or the neighbouring districts. The number and appearance of these birds in this country, seem to be determined by the rigour of the weather. As long as they are in the field, the inhabitants of the country conclude that the severity of the winter is not yet past. They live upon the fruit of the hawthorn, and almost every description of berry during the winter; flesh eatable.

The *Merula*, or Blackbird. See BLACKBIRD.

The *Torquatus*, or Ring-ouzel, is blackish; bill yellowish; collar white. One or two other varieties, from diversity, are called Water-ouzel and Rock-ouzel. The most beautiful of this tribe is the Carnation, or Rose-colour ouzel. The ouzel inhabits Europe, Asia, and Africa; is eleven inches long, and feeds on insects and berries. The rose-coloured ouzel has been occasionally seen in this country.

The *Polyglottus*, Mocking bird, or Mimic thrush, is dusky ash, beneath pale ash; primary quill feathers white on the outer half; feeds on berries, fruits, and insects; nine and a half inches long. This bird forms a striking exception to the general character of the birds of the new world. It is well-known, that the rich, lively, and brilliant hues of the feathered race in that continent, are commonly accompanied with harsh, monstrous, and disagreeable notes, but the mocking bird is said to be the most melodious of all birds, the nightingale not excepted. Besides the charms of its natural song, it has the wonderful faculty of counterfeiting the notes of every bird of the woods; and the songs which it repeats, it seems only to imitate, in order to improve them, and to perfect and increase his own powers, by exercising them in every possible manner. With all these qualifications, which endear him to man, the mocking bird is of a very ordinary appearance, compared with the other tenants of the American woods. It is found in Carolina, Jamaica, New Spain, and, in general, inhabits most of the warm and temperate climates of America. It is fond of the vicinity of man, and easily domesticated. It perches upon the trees around the planters' houses; and sometimes upon the chimney tops, where it remains all night, pouring forth the sweetest and most varied notes.

The *Curæus* is the size of the missel; sings finely, and imitates the notes of other birds; and, when tame, the voice of man. Inhabits Chili.

The *Tinniens*, or Alarm thrush, is above brown, beneath white; breast spotted with black; six and a half inches long: inhabits Cayenne; cries every morning and evening, for the space of an hour, with a harsh, loud voice, like an alarum bell.

The *Arundinaceus*, or Reed thrush, is rusty brown, beneath white-testaceous; quill feathers brown, tipt with reddish; three other varieties; inhabits reedy marshes of Europe; builds a hanging nest among the reeds; lays five or six yellowish-white eggs, spotted with brown; male sings while the hen is sitting; seven inches long.

THRUSH, or *Aphtha*, a disease affecting adults, distinguished by whitish, or ash-coloured pustules on the uvula, fauces, palate, tonsils, inside of the cheeks, gums, tongue and lips. They, for the most part, begin at the uvula, sending forth a glutinous mucus, and the pustules covering all, or the greatest number of the parts abovementioned, with a thick whitish crust adhering most tenaciously. This crust, does not induce an escar on the parts on which it lies, by eating into them, but comes off in whole pieces, after the pustules have arrived at maturity. This will often happen in a short time, so that the throat and internal parts of the mouth are frequently observed to be clean, which a few days before were wholly covered with white crusts. This disease is not confined to the throat and fauces, but is said to affect the œsophagus, stomach, and intestines. But this is, however, doubtful.

It arises, in general, from cold and moisture, and deficient food; and is said to appear sometimes, even in adults, without fever; but this we suspect is not correct. It is, in general, attended with fever; and is sometimes a dangerous, and always a tedious and troublesome disease. One of the best gargles in this complaint is a decoction of quince seeds, (see QUINCE,) acidulated so as to be agreeable to the patient with muriatic acid. The safest course, however, is to take the advice of an experienced physician.

For the treatment of the *Thrush of Infants*, see INFANCY.

THRUSH, in farriery, a disease of the horse's frog, consisting in a discharge of stinking matter from its cleft or division; sometimes the other parts of the frog are also affected, becoming soft and ragged. Having removed the shoe, pare away any ragged parts there may be, so as to expose fully the diseased surface; after cleansing the frog perfectly, apply a solution of sulphate of zinc, or sulphate of copper; and a hort time after pour some melted tar ointment into the cleft of the frog, and let its whole surface be covered with tow dipped in the same ointment; and upon the tow place a flat piece of wood, about the width of the frog; one of its ends being passed under the toe of the shoe, the other extending to the back part of the frog, and being bound down by transverse slips of wood, the ends of which are placed under the shoe. This dressing must be repeated daily. When a thrush is attended with inflammation and lameness, a poultice applied for two or three days will be proper.

Thummerstone. See SCHORL.

THUNDER, a loud noise produced in the air, and generally preceded by a flash of lightning.

The tremendous and astounding noise of thunder, and the vivid flash and zig-zag line of rapid light usually denominated lightning, have always impressed the human mind, and indeed many animals, with great terror. The effects, which are occasionally produced by lightning, have also contributed to heighten the impression; and have stimulated ingenious persons to attempt various methods of preventing the disastrous consequences of a powerful discharge from an electrical battery in the atmosphere. But except in the erection of conductors, (see CONDUCTOR,) and in ascertaining the safest method of avoiding the effects of lightning at the surface of the earth, (see LIGHTNING,) we are not aware that any useful and effectual method has been invented to arrest or impede the action of this " grand artillery of the sky." It is true Dr. FRANKLIN invented what has been called the *Electrical Kite;* but we doubt exceedingly its utility; and, except in the hands of the intelligent and scientific, it should never be elevated into those regions of electricity and combustion, where the operations of nature are carried on with so much sublimity and grandeur.

It appears to us that thunder and lightning are essential parts of a process for *restoring the balance* which has been lost, as numerous other processes in nature are, in consequence of the elevation of gas, most probably carburetted hydrogen, from the surface of the earth into the upper regions of the atmosphere; and a part of that process consists in the production of water, which often falls in large quantities at such times; which process not only clears the atmosphere of the gas, but affords the pabulum of water for vegetables, &c., and also for cooling the earth. But, it may be said, lightning sometimes is seen without thunder, and without rain :—it is true ;—this appears also a process for restoring the balance of the electric fluid only ; and merely proves that no combustible gases are then in the regions of the passage of the electric spark. We conclude, therefore, that the bright and vivid line of light which forms the chief feature, besides the general flash of lightning, is the electric fluid, or other electric power, be it what it may, either passing from one cloud to another, which clouds are in different states of electricity, or from the clouds to the earth, where, at last, *the balance is restored.* Now it is well known that the electric fluid, when coming in contact with oxygenous and hydrogenous gas, in various degrees of mixture, will produce an explosion, and that water will be the result. It is well known, also, that most thunder-storms take place in the afternoon ; and, in this country at least, in the summer season, when the production of carburetted hydrogen during the day is most likely to be greatest. Let us apply this to the process by which thunder appears to be produced :

All liquid as well as gaseous bodies, in passing through other liquid or gaseous bodies with which they do not intimately combine, or in which they do not dissolve, assume a globular form. The hydrogenous gases which arise from various decomposing processes at the surface of the earth, ascend in the atmosphere to a certain height, according to their specific gravities, and float about in masses or globules, of various dimensions, till, coming in contact with the electric fluid, an explosion is the consequence, water is formed, and descends frequently in torrents to the earth. If only one of such masses or globules should explode, we may conclude that no other was near it ; but when a series of continuous explosions takes place, the conclusion is, that a series of insulated masses or globules of hydrogenous gas, more or less large, was in the neighbourhood of the first mass which exploded ; the first explosion extending to the second, and so on as long as any globules of gas are within the sphere of the igniting effect of the previous explosion.

That this is the rationale of thunder we think must be evident. It has been asserted that the rumblings succeeding the first report are merely the echoes of that report ; and that the first report is the sudden passing of the electric fluid from one cloud to another, or to the earth ; but this appears to us totally untenable. Echo may, doubtless, have some share in these rumblings, but the true cause, we think, is as above stated.

Thunder and lightning are, then, our readers should remember, necessary parts of a process for restoring to the atmosphere and to the earth, that healthy state which, by other processes, they have for a time lost ; and, after taking every proper precaution to guard against their ill effects, which it is in our power to do, (see CONDUCTOR and LIGHTNING,) we may rest satisfied that these, as well as day and night, and the alternations of the seasons, are a necessary part of that grand machine, the universe, in a contemplation of which man can never cease to admire.

Thunny. See MACKAREL.

THYMBRA, in botany, a genus consisting of three species, natives of Macedonia, the south of Europe, and Africa ; the two following, the *spicata*, or Spiked thymbra, a shrubby plant, with purple flowers; and the *verticillata*, or Whorled thymbra, also with purple flowers, are cultivated.

THYME, STONE BASIL, or *Thymus*, a genus of plants consisting of twenty-four species, scattered over the globe, of which four are common to our own country. The following are cultivated. The *serpyllum*, Wild thyme, or Mother of thyme, indigenous to our heaths ;—the *vulgaris*, or Garden thyme, a native of Spain and Siberia ;—the *mastichina*, or Mastic thyme, a shrub, native of Spain ;—the *virginicus*, Virginian savory, or Thyme, with perennial root, and annual stalk, a native of America ;—the *calamintha*, or Calamint, found on our road-sides, in a wild state;—the *acinos*, or Wild basil, found in our dry fields. Many of these are used as pot-herbs, and some of them were formerly in the materia medica; but, as medicines, they are all unimportant. See MARJORAM.

Lemon thyme is a variety of the *serpyllum*, the first named species: it is very pungent, and has a particularly grateful odour, approaching to that of lemons. Most of these may be propagated by parting the roots, or by slips.

Tibia. See LEG.

TIC DOULOUREUX, a painful affection of the nerves, which mostly attacks the face, particularly that branch of the fifth pair which comes out of the foramen beneath the eye. Many medicines have been given for this excruciating complaint, such as opium, and other antispasmodics; but the most effectual cure is in completely dividing the nerve; this must, of course, be done by the experienced surgeon.

We ought, however, to mention, that carbonate of iron has been lately given with great success by Mr. B. HUTCHINSON, in this complaint. It must be given in large doses, of not less than two scruples, or even a drachm at a time, and be repeated two or three times a day. It must also be taken for some continuance: one case, mentioned by Mr. H. required a month for its cure; but at the end of this period it was complete.

TICK, or *Acarus*, a genus of apterous insects; mouth without proboscis; the sucker with a cylindrical bivalved sheath; feelers two, compressed, and as long as the sucker; eyes two, placed on the sides of the head; legs eight. The species and varieties are very numerous, and include all those in our own language denominated *tick*, or *mite*. The *red spider*, *acarus baccarum*, or the *mite*, infects currant and other fruit-trees, and also hot-houses; fresh slacked lime is the best preventive of its ravages. See ITCH, MITE, and CHEESE. The ticks which infest sheep and dogs are readily destroyed by a strong decoction of tobacco.

Tick-seed. See SUN FLOWER THE BASTARD.

TIDE, the periodical motion of the waters of the sea. In most places the tide ebbs and flows twice in twenty-four hours. In others there are no perceptible tides, and in some places the ebbing and flowing are very irregular.

The tides flow highest the second or third day after the full and new moon; these are called *spring* tides; when they flow lowest they are called *neap* tides; which is about seven days after the highest spring tides. The time of *high-water* is continually varying; being later by about half an hour every tide than the preceding one. The highest spring tides happen generally about the equinoxes; that is, on or about the 22d of March, and 22d of September; but they sometimes occur earlier, and sometimes later than both these periods. The tides are not so great in the torrid zone, between Africa and America, where the ocean is narrow, as in the temperate zones on either side; nor does the tide much around islands far distant from shores. The Mediterranean, the Black, and the Baltic seas have little or no sensible tides, because they do not communicate with the ocean, so as to be affected by the rise or fall of its tide.

As the tides pass over shoals, and run through straits into bays of the sea, their motion becomes various, and their heights depend on many circumstances. At some ports in the Bristol channel, and at high spring tides, the water flows from forty to sixty feet in perpendicular height, whereas in the Thames it rarely exceeds thirty.

The tides are generally ascribed to the attraction of the sun and moon; and some have supposed that the diurnal revolution of the earth on its axis also contributes to the phenomenon; whilst others have attributed it to the motion of the earth alone.

TIERCE, a liquid measure, as of wine, oil, &c., containing 42 gallons, or the third part of a pipe, whence its name. Tierce is also the name of a cask for various kinds of dry goods. A tierce of sugar contains from five to eight hundred weight or more.

Tiger. See CAT.

TILES, a sort of thin bricks, made of clay, dried and burnt, and used for covering the roofs of houses. They are of different shapes according to the uses for which they are intended: there are plain tiles, ridge tiles, gutter tiles, pan-tiles, &c.; they are all made to certain gauges; and the makers are subject to heavy penalties if they exceed the dimensions fixed on by the several acts of parliament. Tiles are also liable to excise duties.

Tillage. See HUSBANDRY.

TIMBER, a term denoting every species of wood that is proper for building.

The woods of different trees differ much in strength, hardness, durability, and beauty; and, consequently, in their fitness for the various purposes to which they are applied. If the stem or trunk of a tree be cut across, the wood is found to be made up of numerous concentric layers, or rings; very distinct in some trees, but less so in others. One of these layers is formed every year; consequently their number corresponds nearly with the age of the tree.

Wood appears to be composed of various vessels, which, in the living tree, convey the fluids necessary to its growth. These vessels convey a watery fluid, called the sap, from the roots to the leaves; when it arrives at the leaves it undergoes some changes, and returns through the bark; and the bark being expanded by this accession of moisture, rises from the wood, and leaves a cavity that becomes filled with the returning sap, which gradually hardens, and forms a new layer of wood. The rising sap flows chiefly through the annual ring next the bark.

In trees, as the leaves expand the sap ceases to flow, and the bark again adheres to the wood; and from the middle of June to the middle of August there appears to be a pause in vegetation; but after this period the sap again begins to flow, and the bark which adhered so closely in the preceding months, may be separated as easily as in the spring.

The sap, which rises through the wood from the roots, is very different in its nature from that which descends through the bark to form the new layer of wood. That which ascends is nearly as liquid as water, and is called the *common sap*. It has, in general, a sweetish taste, and contains sugar and mucilage; it also contains an acid, which is sometimes combined with lime or potash. When left to itself it soon becomes sour; and when the proportion of sugar is great, it undergoes the vinous fermentation. The *descending sap*, called the *proper sap*, differs considerably in different trees; but its properties have not been much examined; it is, however, always less liquid, and contains a much greater proportion of vegetable matter than the common sap.

That part of the wood next the bark is called *sap-wood*, or sometimes *sap* only; through this chiefly the common sap ascends; and as it contains the vegetable matter destined to be expanded in forming leaves and buds, it is reasonable to suppose that this wood must be more prone to decay than the internal part of the tree, called *heart-wood*, or *heart*. As trees increase in size, the oldest part of the sap-wood gradually loses all vegetable life; and the more fluid parts of it are either absorbed by the new forming sap-wood, or evaporated; its vessels and cells become closed by the pressure of the new forming wood, and it ceases to perform any other part in the growth of the tree than merely to support it. When these changes have taken place, it is found to be more compact, and generally of a darker colour, and also contains only a small proportion of vegetable matter, besides that kind which is called by chemists the *woody fibre*. It is then heart-wood, or wood in its most perfect state.

The sap-wood is softer, most commonly lighter coloured than the heart-wood, decays in general rapidly, and is also very subject to worms. The proportion of sap-wood in different trees varies very much. Spanish chesnut has a very small proportion, oak has more, and fir a still larger quantity than oak. But the proportions vary, according to the situation and soil in which the trees grow.

Trees of the same kind arrive at the greatest age in that climate, which is best adapted to their nature. The common oak, the fir, and the birch, thrive best towards the north; the ash and the olive thrive best towards the southern parts of Europe; the ash-trees of Calabria and Sicily are longer lived than those of Prussia or Great Britain. Oak and chesnut trees, under favourable circumstances, sometimes attain the age of 1000 years; beech, ash, and sycamore, seldom arrive at half that age. The decline of trees appears to be caused by the decay of the heart-wood. In trees which have not arrived at maturity, the hardness and solidity of the wood are greatest at the heart, and decrease towards the sap-wood; but in the mature, or perfect tree, the heart-wood is nearly uniform; while that of a tree on the decline is softer at the centre than it is next the sap-wood.

When a tree is felled too soon, the greatest part of it is sap-wood; and when a tree is not felled till it be on the decline, the wood is brittle, devoid of elasticity, tainted, discoloured, and soon decays. But in trees which are mature, the proportion of sap-wood is small, and the heart-wood is nearly uniform, hard, compact, and durable.

The period generally allowed for an oak-tree to arrive at maturity is 100 years; but in some cases it arrives at maturity in a less time; and in others not till after that period: at less than 60, or more than 200 years, it will not be often profitable to cut it down. The ash, the larch and elm, should be cut when between 50 and 100 years old; and between 30 and 50 is a proper age for poplars. The Norway spruce, and Scotch pine, are generally cut when between 70 and 100 years old in Norway.

In order that timber may be durable, it is also necessary to attend to the proper season of the year for felling it. But on this point there is much difference of opinion. There are, it appears, two periods of the year, the spring and autumn, when the sap of trees is in great activity, and therefore, at these times, it is desirable to avoid felling timber for any other than temporary purposes; and of these periods the spring must be the worst, because trees then contain the greatest quantity of matter, which most readily undergoes decomposition. The best time, therefore, for felling timber, is either in mid-winter, or mid-summer, as at these times the vegetative powers are at rest, or have expended all the most readily decomposed parts, in producing leaves,&c. Some kinds of trees, such as alder and beech, are, it is said, most durable when felled at Midsummer; and it has been hence inferred that this period is a proper one for all other trees. But as the bark of the oak is too valuable to be lost, and as the best period for the timber is the worst for the bark, a method has been long partially practised of taking the bark off the tree standing, early in the spring, and not felling it till after the new foliage has been put forth and died; the ensuing winter in this case is, therefore, the best period for felling. When, however, the bark of a tree is not of a sufficient value to defray the expense of stripping, the timber should be felled during the months of December, January, and February, in the winter; or during the month of July in the summer: winter felling is recommended by most persons.

When timber is felled, the sooner it is remvoed from the forest the better; it should be placed in a dry situation, so that the air may circulate freely round each piece, but it should not be exposed to the sun and wind. Square timber does not rift or split so much as that which is round; and where the size of the trees will allow it, it is better to quarter them. When beams are to be used the full size of the tree, it would be a good preservative against splitting to bore them through from end to end, as is done in a water pipe. *Timber* *should never be suffered to lie on the damp ground*; an upright position is the best for drying and seasoning it; and *gradual* drying is the best. For the general purposes of carpentry, timber should not be used in less than two years after it is felled; and this is the least time that ought to be allowed for seasoning. For joiners' work it requires four years, unless other methods be used; but for carpentry, natural seasoning should always be preferred.

On account of the time which is required to season timber in the natural way, various methods have been tried to effect the same purpose in a shorter time. Perhaps, the best of these is to immerse the timber in water as soon as it is cut down; and, after it has remained about a fortnight in water, but not more, to take it out and dry it in an airy situation. Salt water is considered the best for ship timber; but for timber to be employed in the construction of dwelling houses, fresh water is better. When the timber is put in water, it must be sunk, so as to be completely under water; nothing is more destructive than partial immersion. See **Dry rot.**

A Table of the properties of different kinds of Timber.

		KINDS OF WOOD AND STATE.	Specific Gravity.	Weight of the modulus of elasticity in pounds, per square inch.	Cohesive force in pounds per square inch.	Comparative		
						Stiffness.	Strength	Toughness
Class I.	Div. I.	Common oak, (*Quercus robur*,) dry —	·750	1·714·500	11·880	100	100	100
		Riga oak, dry — — — — —	·688	1·610 496	12·888	93	108	105
		Dantzic oak, seasoned — — —	·755	1·998·000	12·780	117	107	99
		American oak — — — — — —	·867	1·958·700	10·253	114	86	64
	Div. II.	Beech, (*Fagus sylvatica*,) dry — —	·690	1·316·000	12·225	77	108	136
		Alder, (*Betula alnus*,) dry — — —	·555	1·086·750	9·540	63	80	101
		Plane, (*Platanus occidentalis*,) dry — —	·648	1·343·250	10·935	78	92	108
		Sycamore, (*Acer pseudo-platanus*,) dry	·590	1·036 000	9·630	59	81	111
Class II.	Div. I.	Chesnut, (*Fagus castanea*,) dry — —	·535	1·147·500	10·656	67	89	118
		Ditto, green — — — — — — —	·875	·924·570	8·100	54	68	85
		Ash, (*Fraxinus excelsior*,) dry — — —	·753	1·525·500	14·130	89	119	160
		Elm, (*Ulmus campestris*,) dry — — —	·544	1·343·000	9·720	78	82	86
		Acacia, (*Robinia pseudo-acacia*,) green	·820	1·687·500	11·227	98	95	92
	Div. II.	Spanish mahogany, dry — — —	·853	1·255·500	7·560	73	67	61
		Honduras ditto, dry — — — —	·560	1·593·000	11·475	93	96	99
		Walnut, (*Juglans regia*,) green — — —	·920	·837·000	8·775	49	74	111
		Teak, (*Tectona grandis*,) — — — —	·744	2·167·074	12·915	126	109	94
		Poplar, (*Populus dilatata*,) dry — —	·374	·763·000	5·928	44	50	57
		Abele, (*Populus alba*,) dry — — —	·511	1·134·000	10·260	66	86	112
	Div. III.	Cedar of Libanus, (*Pinus cedrus*,) dry	·486	·486·000	7·420	28	62	106
		Riga fir, (*Pinus sylvestris*,) dry — —	·480	1·687·500	9·540	98	80	64
		Memel fir, (*ditto.*) dry — — — —	·544	1·957·750	9·540	114	80	56
		Mar Forest fir, (*ditto.*) — — — —	·684	·845.066	7·323	49	61	76
		Planted Scotch fir, (*ditto.*) dry — —	·460	·951·750	7·110	55	60	65
		Christiana white deal, (*Pinus abies*,) dry	·512	1·804·000	12·346	104	104	104
		American white spruce, (*Pinus alba*,) dry	·465	1·244·000	10·296	72	86	102
		Planted spruce, (*Pinus abies*,) dry —	·555	1·393·975	8·370	81	70	60
		Weymouth pine, (*Pinus strobus*,) dry —	·460	1·633·500	11·835	95	99	103
		Pitch pine — — — — — — —	·660	1·252·200	9·796	73	82	92
		Larch, (*Pinus larix*,) dry — — —	·643	1·363·500	12·240	79	103	134

In the last three Columns of this table, oak is made the standard of comparison.

In the preceding table, the *first* class contains all woods that have larger transverse septa; the woods of this class are compact, hard, and heavy; never very deep coloured, the oak being the darkest coloured of the class; they are nearly free from smell, and never resinous. This class has two divisions: woods in which the annual rings are distinctly porous on one side, and compact, or nearly compact, on the other,—woods in which the annual rings are sensibly uniform, and only distinguished by a difference of colour. The *first* division contains the oak, which is universally allowed to be the best of woods. The *second* division contains several kinds of wood, the beech, alder, plane, and sycamore, are all we can notice; these woods are very uniform in their texture, and very durable in water; they are useful for piles and planking in wet situations, but not applicable to other kinds of carpenters' work; they do not warp so much as those of the first division.

The *second* class contains all woods that have no larger transverse septa; many woods of various colours and qualities belong to this class, which contains three divisions:—the *first* and *second* formed on the same distinctions as the first and second in the first class,—the *third* division includes all the woods of which the pores are filled with resinous matter; the woods of the *first* division are very subject to warp in drying. Those of the *second* division are uniformly porous, but they retain their original form well; they are also very numerous, but many of them have little durability. Some of the most useful and the most durable kind of woods belong to the *third* division.

For the preceding table, and indeed for the chief of this article, we are indebted to the *Elementary Principles of Carpentry*, a valuable work in 4to. recently published by Mr. THOMAS TREDGOLD.

TIME-PIECE, or TIME-KEEPER, an instrument adapted for measuring time. Under this term are included clocks, watches, and all other contrivances for measuring the progress, or ascertaining the duration of time.

The ancients knew no other time-pieces than the common *sun-dial;* and the water-clock, called *clepsydra*, by which water was allowed to descend in drops, so that the portion thus disengaged indicated the length of time which had elapsed: for these contrivances hour-glasses were afterwards substituted.

The present time-pieces with the pendulum, were probably invented in Italy about the beginning of the 14th century; but *watches* were not known in Europe till the middle of the 17th century.

Clocks, and all other time-keepers, consist of two principal parts; the machinery, which communicates and divides the motion; and that which regulates it to a required degree of uniformity.

The names of HOOKE, HUYGENS, SULLY, HARRISON, LE ROY, ARNOLD, MUDGE, and many others, may be mentioned, as having contributed to the more perfect construction of time-keepers. An improved *three-wheeled clock*, constructed by Mr. JAMES FAYRER, and described in the 37th Vol. of the Transactions of the Society of Arts, is also deserving of notice.

It is not consistent with our work to go more at large into the construction of time-keepers, but persons having clocks, watches, &c. should be most careful that the machinery is not oiled with *olive oil*, as that is soonest affected by the changes of temperature; from the use of this oil alone, we doubt not, it frequently happens that both clocks and watches go badly; the best oil with which we are acquainted for such purposes, is oil of almonds, which never congeals in the coldest winter temperature of this country.

TIMOTHY-GRASS, CAT'S TAIL, or *Phleum*, a genus of plants comprehending five species, four of them common to the pastures, mountains, meadows, or sea-marshes of our own country, and occasionally cultivated as a useful food for cattle. In America, timothy-grass is the principal growth of their meadow lands, succeeding well in moist situations; but, though productive, it is coarse and late. See GRASS.

TIN, or *Stannum*, a metal of a silvery white colour; it is malleable, though sparingly ductile; its specific gravity is 7,30. It melts at 440°; and by exposure to heat and air is gradually converted into a white peroxide. It is obtained by heating the native oxide, which is the principal ore of tin, to redness with charcoal.

Tin has been known from the remotest ages; it was in common use in the time of Moses; and was obtained at a very early period, from Spain and Britain, by the Phœnicians.

Native oxide of tin is found in Cornwall, in Spain, and in Saxony; it is also found in Brittany, in France, in the East Indies, and in South America. The specific gravity of the native oxide is 7; its primitive crystal is an obtuse octoëdron. In some of the valleys of Cornwall, tin is found in rounded nodules of various sizes, mixed with pebbles and rounded fragments of rocks. To separate the tin from the alluvial matter, currents of water are passed over it, whence the ores have been called *stream tin*. Hence the tin smelted from this ore, from its being found in grains, is called in commerce *grain-tin*. The *block-tin* of commerce is prepared either from the mineral called *tin-stone*, or from that known in Cornwall by the name of *tin pyrites*. This last, which is produced in the greatest abundance, is always contaminated with a portion of iron, sulphur, and other injurious substances, and therefore only employed for common purposes. While the grain tin, which is nearly free from every impurity, is used in the processes of dyeing, and in all other processes where *pure* tin is required. One of the most extensive sources of stream-tin is a branch of Falmouth harbour. The *stannaries* of Cornwall furnish a great revenue to the present king, as Duke of Cornwall.

Tin is used for innumerable purposes in the arts; see the following article; and also as *tin-foil*, see LOOKING GLASS; for making bell-metal, see COPPER; and bronze, see BRONZE; see also TINNING.

The *muriate of tin*, used by dyers, may be obtained by boiling one part of tin with two of muriatic acid. With a solution of gold, this solution produces a purple precipitate used in painting porcelain, called *purple of Cassius*. See GOLD and DYEING.

Tin combines with many of the other acids, and also with sulphur. The salts of tin are mostly soluble in water; they are precipitated of an orange colour by hydriodic acid, and by hydrosulphuret of ammonia, provided no excess of acid be present.

Tin, as a medicine, is considered anthelmintic. It is given in powder as a remedy for the tape-worm; the dose is from one to two drachms mixed in treacle, for two or three successive mornings; afterwards a brisk cathartic should be exhibited; but from the superiority of oil of turpentine for the expulsion of this worm, it is not likely to be hereafter much employed. See WORMS.

Tin glass. See BISMUTH.

TIN-PLATE, LATTIN, or LATTEN, wrought iron plate covered with a coating of tin.

For the formation of tin-plate, English bar iron of the finest quality, called tin iron, and which is generally prepared with charcoal instead of coke, is first cut to the necessary length, and then rolled in a mill into plates of the requisite thickness, and of a proper form; the plates are then cut by hand-shears to suitable sizes. Two hundred and twenty-five plates are called a box. Tin plate, called No. I. is 13¼ inches long, and 10 inches wide.

After having undergone various processes of *scaling*, *cleansing*, and *rolling* a second time, they are immersed in an acid liquor made of bran and water; and lastly steeped in a mixture of sulphuric acid and water, till they have become perfectly bright and free from black spots; they are afterwards washed in pure water, and scoured with hemp and sand to remove all remains of oxide or rust. They are then in a fit state to be tinned. For this purpose an iron pot is nearly filled with a mixture of equal parts of *block* and *grain tin* in a melted state; and a quantity of tallow or grease, sufficient, when melted, to cover the fluid metal to the thickness of four inches, is put to it; the metal is heated in the pot by flues which go round and beneath it, until it is as hot as it can be made without actually inflaming the grease which swims upon it. The use of the grease is to preserve the tin from the action of the atmosphere, and consequently to prevent it from oxidating; burnt grease, or any kind of empyreumatic fat, effects this purpose better than pure fresh tallow. Another pot, fixed by the side of the pot containing the tin, is filled with grease only; and in this the prepared plates are immersed, one by one, before they are treated with the tin. When the pot is filled with them, they are suffered to remain in it as long as the superintendant thinks necessary. An hour is better than a shorter period. From the grease-pot they are removed, with the grease adhering to them, into the pot containing the melted tin, in which they are placed in a vertical position; about three hundred and forty plates are usually put into the pot at once; and they usually remain in it one hour and a half; but occasionally more time is required to complete the operation. They are then taken out, and drained upon an iron grating. But, notwithstanding this, more metal adheres to them than is necessary; this is taken off by a subsequent process called *washing*, which is done by passing them through a large quantity of melted grain tin, which melts all the loose tin on the surface of the plates; which, when taken out of the wash-pot, are carefully brushed on each side, with a brush of hemp made for the purpose. Every plate is thus dipped and brushed *twice*. The plates are then immersed for a short time in melted tallow; and, after having the wire of tin which is on the lower edge of the plate knocked off by a smart blow, when heated to a proper degree, they are cleaned by means of bran, and are then fit for sale or use. Persons who desire further information on this subject, will find it in a paper in the 15th Number of the Journal of Science, by Mr. PARKES.

An elegant improvement in the appearance of tin-plate has been lately invented. It consists in washing it over with a weak acid, when the crystalline texture of the tin becomes beautifully evident, forming an appearance which has been called *moiré metallique*. It is already in extensive use for tea-caddies, &c. &c.

The uses of tin-plate are too numerous to be specified.

Tincal. See BORAX.

TINCTURE, in pharmacy, a solution of any substance in spirit of wine, by which the spirit is tinctured or coloured. Tinctures are made with both rectified and proof spirit. For the method of preparing tinctures generally, see PHARMACY. The most important tinctures will be found under the respective articles in the order of the alphabet. See BENZOIN, CAMPHOR, PERUVIAN BARK, RHUBARB, &c. &c.

TINNING, the art of covering any metal with a thin coating of tin. Copper and iron are the metals most commonly tinned.

The principal circumstances necessary to be attended to in the art of tinning is to have the surfaces of the metal to be tinned, perfectly clean and free from rust; and also that the melted tin be perfectly metallic, and not covered with any ashes or oxide. For the method of tinning iron plates see tin-plate. When a small quantity of iron only is to be tinned, it should be heated, and the tin rubbed on with a piece of cloth, or some tow, having first sprinkled the iron with some powdered resin, the use of which is to reduce the tin that may be oxidated; any other inflammable substance, oil for instance, will have, in some degree, the same effect.

Sheets of *copper* may be tinned in the same manner as iron plates. Copper boilers, saucepans, and other kitchen utensils are tinned after they are made. They are first scoured, and then made hot, and the tin rubbed on, as before mentioned, with resin. Or, after the interior surface is cleaned, it may be rubbed over with powdered sal ammoniac; the vessel is then to be heated, and a little pitch spread over the surface; a bit of tin is then rubbed over it, and it instantly unites with the copper, and covers it. Nothing ought to be used for this purpose but pure grain tin. But we are sorry to observe, lead is frequently mixed with the tin, both to adulterate its quality, and to make it lie more easily. It is a very pernicious practice, and cannot be too severely reprobated.

To *whiten brass or copper by boiling*; put the brass or copper into a pipkin, with some white tartar, alum, and grain tin, and boil them together. The articles will soon become covered with a coating of tin, which, when well polished, will look like silver. It is in this manner pins, and many kinds of buttons are whitened.

TITANIUM, a metal of a dark copper colour, very hard, brittle, in minute agglutinated grains. It tarnishes in the air, and is easily oxidized by heat; it then acquires a bluish aspect; it detonates with nitre, and is highly infusible; its specific gravity not determined. It is found in the following substances:

Titanite is nearly a pure oxide of titanium; it is of a brown colour, and occurs embedded in quartz and granite, in primitive countries. In this country it is found at Bedgellert, in Caernarvonshire, and near Killin, in Scotland. The finest specimens are from the vicinity of Mont Blanc and St. Gothard. *Anatase*, *octoedrite*, and *oysanite*, are nearly of the same nature as titanite; they are found in Bavaria, Norway, Switzerland, and at Oysans, in France. *Menachanite*, which contains oxide of titanium, is found in Cornwall; *Nigrine*, *Iserine*, and *Rutilite*, or *Sphene*, are also ores of titanium.

Titanium is said to be susceptible of three degrees of oxidizement, the colours of the oxides being blue, red, and white. It is a metal which has been only discovered about twenty years, and its qualities and uses are, as yet, not much known.

Titlark. See LARK.

TITMOUSE, or *Parus*, a genus of birds comprehending thirty-one species, scattered over the globe, of which eight are common to our own country.

It is a very fertile tribe, laying eighteen or twenty eggs at one hatch. They feed on seeds, fruits, and insects, and a few on flesh. They are restless, bold, and cruel to birds less than themselves; and will attack such as are three times their own size. The following are the chief.

The *Major*, or Great titmouse, has the head black, temples white, nape yellow; bill, chin, and tail, black; back and wings olive, rump blue-grey; belly greenish yellow; legs lead colour; five and three quarters inches long; frequents gardens, but builds in woods, and lays about ten eggs, which are white, with rusty spots; said to be injurious to gardens and orchards, by picking off the tender buds from trees. Inhabits Europe, Asia, and Africa, and also our own country. Another variety, having a bill forked and crossed as in the *loxia curvirostra*, hence it has been called the cross-bill titmouse.

The *Cæruleus*, Blue titmouse, or Tom-tit, has the back yellowish green, tail blue, body beneath white yellow; four and a half inches long; frequents gardens like the last, and a very mischievous bird; breeds in holes of walls, and lays from twelve to fourteen small white eggs; inhabits Europe, and well known in our own country. It is a great enemy to the annual sun-flower seed, destroying it almost always, if not prevented, before it is even ripe.

The *Palustris*, or Marsh titmouse, has the head black, back cinerous, temples white: three other varieties; found in our own country, except one of the varieties, which is a native of Louisiana; rather larger than the tom-tit.

The *Laudatus*, or Long-tailed titmouse, has the tail longer than the body; crown white; greater wing coverts black, lesser brown, edged with rosy; five and a half inches long; very destructive to trees in gardens; nest oval, with a hole near the upper end for admission; the interior of the nest filled with abundance of soft white

feathers; **eggs from ten to seventeen or more; inhabits Europe and our own country; called in some districts Long-tailed capon.**

The ***Pendulinus,*** or Penduline titmouse, frequents moist and marshy places, and builds a nest in the shape of a large purse, with an opening on one side, and attached to the end of some branch of a tree hanging over water; four and a half inches long; inhabits Europe as far as Siberia.

The ***Biarmicus,*** or Bearded titmouse, is rufous, tail longer than the body, head bearded; six and a quarter inches long; suspends its nest between three reeds; inhabits Europe in marshy places, and found in our own country.

The *Amatorius*, or Amorous titmouse, is blackish blue; five and a half inches long; remarkable for the great affection which each sex shows towards the other; inhabits northern Asia.

Toad. See FROG.

Toad Fish. See FROG FISH.

Toad flax. See SNAP-DRAGON.

TOBACCO, or *Nicotiana*, a genus of plants, comprehending seven species, natives of North America, Peru, and China. The following are chiefly cultivated.

The *Fruticosa*, or Shrubby tobacco, with leaves lanceolate, slightly petioled, clasping the stem, which rises about five feet high, and is shrubby; flowers bright purple; a variety with white flowers; a native of China and the Cape.

The *Rustica*, Common, or English tobacco, has the leaves smooth, alternate, petioled, ovate, and very entire; stalk about three feet high; flowers yellow, and in small loose bunches, on the top of the stalks; a native of America, and called English tobacco from being the first species introduced into England, and from its thriving here better than any other species. A variety with stronger stalks and leaves, and larger flowers.

The *Tabacum*, or Virginian tobacco, has a large, long, annual root; stalk upright, strong, round, hairy, branching towards the top; about four feet high; leaves numerous, large, pointed, entire, veined, pale green; flowers in large terminal panicles; corol divided into five segments, of a reddish colour; it blossoms in July and August; a native of Virginia. Two varieties; one broad, the other narrow-leaved; but they do not differ in their medicinal properties. All the species may be propagated by seeds.

Tobacco was, at one period, raised to a considerable extent in Yorkshire; but the cultivation of it, except for medicinal purposes, and on a small scale, has been long prohibited; and this country, as well as the greater part of Europe, is chiefly supplied from Virginia, where the plant is cultivated in the greatest abundance; and where it is not allowed to attain its full height, but is topped when a certain number of leaves is thrown out. It is cut down in August, and the plants are hung up in pairs, in sheds to dry; after which the leaves are separated from the stem, bound up in bundles, and packed in the hogsheads in which they are exported. The duty on tobacco consumed in this country, is three shillings per pound if imported from British plantations, the United States, Russia, or Turkey; and if from Spain and Portugal five shillings per pound.

Tobacco, in commerce, is known by various names, such as *Virginia, Maryland*, coarse and fine *shag*, *roll tobacco*, *&c. &c.* Of smoking this drug we have spoken under the article SMOKING; it will be, therefore, wholly unnecessary to repeat what we have there said, here; nor need we say more relative to SNUFF, which is chiefly prepared from the dried stalks of tobacco, than merely to refer to that article.

Of tobacco, as a medicine, it is, however, necessary to make a few observations. It is narcotic, emetic, diuretic, cathartic, and errhine; producing, in persons unaccustomed to smoking or chewing it, very severe sickness, vomiting, head-ach, great debility, cold sweats, and sometimes even convulsions. Such being its powers, it has been sometimes found useful in relieving violent spasmodic constriction, obstinate constipation, suppression of urine, and some other complaints, when administered in the form of clysters. It has also been occasionally useful, when chewed, in allaying the pain of the tooth-ach; and, in being smoked, it has also been sometimes of service in spasmodic asthma.

An infusion of it has also been occasionally applied to the itch and other cutaneous diseases; as a snuff it is too well known; but we advise our readers to avoid its use, except under the direction of an experienced medical attendant. It makes, however, a useful shab-water for sheep, &c. See MANGE.

For the treatment of persons who have taken tobacco in excess, or by mistake, see POISONS, under the third division, *acrid narcotics*.

TOBACCO-PIPE FISH, or *Fistularia*, a genus of fishes comprising three species, distinguished by a cylindrical snout, and jaws distant from the eyes; body round, gently tapering from the jaws to the tail. The *Tabacaria*, is about a foot long, and has the general appearance of an eel; inhabits America and Japan. The *Chinensis*, inhabits India, longer than the former. The *Paradoxa*, has the body reticulate, with prominent lines, colour whitish ash; two inches long; inhabits Amboyna.

TODY, or *Todus*, a genus of birds comprehending sixteen species, mostly inhabitants of the warmer parts of America; they are distinguished by a subulate, depressed, obtuse, straight bill, covered at the base with bristles; nostrils oval, small; feet gressorial; they are very nearly allied to the fly catchers, but are distinguished by their having the middle and outer toes much connected, which in the fly catchers are divided to the base.

The *Viridis*, or Green tody, is best known and most esteemed; size that of a wren, scarcely four inches in length; bill red; back light blue; belly white; throat and sides a beautiful rose colour; the upper parts of the body are green in the female, in the male blue. Claws long, hooked, and adapted for scooping out a hole in the ground, where it takes up its abode and builds its nest; eggs grey, with deep yellow spots; this species is called in St. Domingo the Ground parakeet.

Toes. See CHILBLAINS, CORNS, and FEET.

TOISE, a French measure, containing six feet, or a fathom.

TOKAY, a wine made at Tokay, in Hungary.

TOLERATION, permission given to that which is not approved. This term is most usually applied to the speculative opinions held by mankind; and chiefly to those which relate to religion. It is a term, however, which the wise and truly benevolent never ought to use: because when certain opinions are *tolerated*, there is an assumption on the part of the persons who tolerate them, that the opinions which they hold are indisputably true, and that the opinions which are permitted or tolerated are false. Now nothing can be more injurious to the progress of truth than such assumptions. As we have stated under our article BIGOTRY, belief is not an object of the will, and, therefore, to restrain or impede speculative opinion by such assumptions and tolerations, is exceedingly unjust. Every individual has as much right to hold any particular opinion as another, how different soever that opinion may be from the opinion of the majority of any community; and to deprive any individual of such community of any civil privileges, merely for such difference in opinion, which he cannot avoid, is just as wise as it would be to punish him for being only of a certain height in stature, or of a particular complexion. Besides, in most European communities, the term toleration has been applied to very different sentiments: thus in countries where Roman catholics are numerous, they are said to *tolerate* protestants; and protestants *tolerate* Roman catholics where protestants are the most numerous; and so of other sects. Surely these contradictions evince the impropriety of the distinctions which are too often made in society, and the privileges granted or refused, in consequence of an assumed right of tolerating opinions only of a certain kind. The possession and promulgation of opinion are matters of right; and that community which gives the greatest latitude to such possession and promulgation has always prospered most. The collision of minds never fails to improve our moral and social well being. Uniformity of opinion amongst mankind, particularly on speculative subjects, cannot be expected; an attempt to compel uniformity by positive laws, or by withholding civil privileges, may make men hypocrites, and the mind a stagnant pool, but it is manifestly injurious to the best interests of the human race.

Tolu. See Balsam of Tolu, and the next article.

TOLU-TREE, or *Toluifera*, in botany, a genus consisting of one species only, the *balsamum*, or Balsam of Tolu-tree; it is branched, and of a large size; the leaves are alternate, elliptical, entire, pointed, and of a light green colour; flowers in lateral clusters; fruit a round berry; a native of South America, and growing behind Carthagena, in the province of Tolu: the balsam of Tolu is obtained from incisions of the bark, which flows freely in hot weather. See Balsam of Tolu.

Tom-tit. See Titmouse.

TON, a weight consisting of twenty hundred weight, or two thousand two hundred and forty pounds avoirdupoise, a ton of timber is forty cubic feet. For *tun* a measure, see Tun.

TONGUE, or *Lingua*, in anatomy, a soft, fleshy viscus, very moveable in every direction, situated in the interior cavity of the mouth, and constituting the organ of taste. Its use is for chewing, swallowing, sucking, speaking, and tasting.

The state of the tongue is frequently an index pointing out the state of the stomach, as well as the febrile state of the whole system. The tongue in sound health should be moderately moist, and of a reddish or flesh colour. When it is dry and white, or when dark coloured, or has coloured streaks on its surface, we may be quite certain that all the functions, and particularly the stomach, are not going on well. In most dyspeptic complaints the tongue has some diseased indication; a dry, white, and parched tongue, is a symptom, amongst others, of inflammatory fever.

Sometimes the *frænum*, or ligament beneath the tongue, extends to the point of it and ties it down; whereas, in the natural state, it ends about one-fourth of an inch further back. When this is the case a surgical operation is necessary, which, of course, a surgeon should be called in to perform; the earlier this is performed on the sucking child, perhaps, the better.

The tongue is liable to tumours and ulcers; one of the chief of these is called *ranula*, which is a swelling under the tongue, containing, sometimes, matter like synovia, sometimes a fatty matter, now and then stony concretions, but most commonly a fluid like saliva; the best mode of treatment is to lay the tumour freely open, and evacuate its contents, completely washing the cavity with any mild fluid, as milk and water; if the sore be difficult to heal, tincture of bark, or other astringents, may be used. A surgeon ought, however, to be consulted.

When ulcers are caused by the sharp edges of the teeth, these should be filed off, or the teeth extracted. *Simple tincture of myrrh* is an application peculiarly well adapted for the use of many ulcers of the mouth and gums. It may be applied on lint, or as a gargle.

TONICS, medicines which increase the tone of the muscular fibre. In other words stimulants of a certain order: bark, gentian, chamomile flowers, and many preparations of iron are tonics.

TONSILS, vulgarly called *almonds*, in anatomy, two oblong, suboval, salivary glands, situated on each side of the fauces, at the entrance of the throat, and opening into the cavity of the mouth by twelve or more large excretory ducts, by which saliva is conveyed for lubricating the mouth, oesophagus, &c.

The tonsils are very liable to enlargement and swelling, sometimes to such a degree as to threaten suffocation. In this case relief can only be obtained by an operation. In sore-throat these glands are chiefly affected. See SORE-THROAT. An indolent hard tumour on these glands sometimes occurs; they have been thought scirrhous, but this is doubtful. When they impede swallowing or respiration, they should be extirpated, which they may be by ligature, by the experienced surgeon, with perfect safety.

Tooth. See TEETH and TEETHING.

TOOTH-ACH, or *Odontalgia*, a painful and distressing disease, too well known to need description.

It is sometimes merely a rheumatic affection, arising from exposure to cold, but more commonly from a carious tooth. It is also a symptom of pregnancy, and takes place in some nervous disorders; it attacks persons of all ages having teeth, but it is most frequent in young persons. It also most frequently attacks the molares, or grinders; more rarely the incisor teeth.

The remedies which have been recommended for the tooth-ach are almost innumerable; but few, if any, have been found to answer the purpose. When the affection is purely rheumatic, a blister behind the ear is the best remedy; but when it proceeds from a carious tooth, which will bear the force necessary to be used for its extraction by a proper instrument, extraction by a careful surgeon is the most effectual remedy. The writer of this has, perhaps, suffered as much from the tooth-ach as any human being, and has, perhaps, tried as many remedies, but he never found one that invariably succeeded in relieving the pain. Camphor, opium, oil of cloves, oil of origanum, and numerous other essential oils, have been occasionally of service; he found, however, most relief from oil of nutmegs; and sometimes a piece of nutmeg itself stuffed into the tooth has considerably mitigated the torment. Pellitory of Spain has been recommended to be chewed, so also has ginger; and a ginger poultice applied outside the cheek, has had its advocates; the pained part has also been recommended to be touched with hot iron, or with oil of vitriol, in order to destroy the aching nerve. Strong nitric acid, diluted with three or four times its weight of spirit of wine, has also been introduced by a little cotton into the hollow of the tooth. Although opium has been strongly recommended to be stuffed into the hollow of the tooth, we have never found it of the least service when thus applied; but taken into the stomach in moderate doses, just before going to bed, it has frequently procured a comfortable night. In some cases matter will be formed beneath the tooth, and more especially so when the tooth is carious, at which time the gums generally swell: the best application is toasted figs. But to be effectual they should be applied for many hours, or a day or two, and renewed every four or six hours; they will produce considerable pain, but their ultimately good effects need scarcely be doubted.

In the tooth-ach the bowels should be moderately relaxed; and if there be a disposition to inflammatory fever, a few ounces of blood may be advantageously taken away. In some habits we have no doubt of the tendency of sugar and sweet substances to produce caries of the teeth, and consequently tooth-ach; they should, therefore, be avoided.

Cleanliness is, undoubtedly, one of the best preventives of this disease. The teeth ought to be cleaned, at least, once a day with a brush, (See BRUSH,) and tooth powder, and afterwards rinsed well with cold water. See the following article.

TOOTH-POWDER, a powder used for cleansing the teeth. Various nostrums have been sold under this name. One of the best tooth-powders is powdered charcoal, or prepared chalk; or a mixture of both; but if this should be objected to, the following makes, we believe, one of the best, as well as the most elegant tooth-powders with which we are acquainted: take of powdered cream of tartar, Peruvian bark, and myrrh, of each equal parts; mix them. If it be desired of a redder colour, a small por- of powdered bole armenic may be added; and if more scented, the addition of a small quantity of orris root in powder, will effectually answer the purpose.

TOOTH-ACH-TREE, or *Xanthoxylum*, a genus consisting of two species: the *trifoliatum*, a Chinese shrub; and the *clava Herculis*, a native of Jamaica.

TOOTH-SHELL, or *Dentalium*, a genus of univalve testaceous worms, consisting of twenty-two species, mostly inhabiting the seas of Europe and India; two of them found on our own coasts; and about five or six known only from fossile specimens. The shell is tubular, with an undivided cavity open at both ends, and commonly white and green, and either ribbed, striated, or dotted; those on our own coast are the *entalis*, with a white shell, reddish or pale yellow; and the *imperforatum*, having a minute white shell, found at Sandwich. A still smaller size is the *minutum*, inhabiting the Mediterranean.

TOOTHWORT, or *Dentaria*, a genus comprehending seven species, all European plants; one the *bullifera*, with lower leaves pinnate, the upper simple, found in the retired shady parts of our own fields; the root was formerly esteemed, prepared in a variety of ways for the tooth-ach, arising from caries.

Topaz. See GEM.

Tope. See SHARK.

Torch thistle. See CACTUS.

TORMENTIL, SEPTFOIL, or *Tormentilla*, a genus of plants consisting of two species, both common to our own hedges; these are the *reptans*, or Creeping tormentil, with a prostrate simple stem, and leaves on foot-stalks; and the *erecta*, or Upright tormentil, with an ascending branched stem, and sessile leaves. The root of this last is a powerful astringent; and contains, it is said, except galls and catechu, more tannin than any other vegetable. It has been employed occasionally in intermittents, and diarrhœas. It is also recommended to be used in the form of gargle in ulcerations of the tongue and mouth, and spongy gums. It may be given in substance or decoction. The dose of the powdered root is from half a drachm to a drachm. Of the decoction, made by boiling one drachm of the root in a pint and a half of water until reduced to one pint, one fluid-ounce may be given thrice a day.

The root has been occasionally substituted for oak bark, in tanning.

Torpedo. See RAY.

Torsk. See COD.

TORTOISE, or *Testudo*, a genus of amphibious reptiles consisting of thirty-five species, scattered over the globe. They are distinguished by having the body tailed, covered above with a bony or coriaceous shell, or scales; upper jaw inclosing the lower like the lid of a box. They are thus subdivided:—Legs fin-shaped, the foremost longer than the rest; constituting the tribe of *marine turtles*; four species.—Feet palmate; shell joined to the chest by a membrane, and propped on each side in the middle, by two processes of the rest; these include the tribe of *river turtles.*—Feet clavate, clawed; shell convex, joined to the chest by bony commissures; these are the tribe of *land tortoises.*

This is a very fertile genus, and, in the egg state, they are the prey of many ravenous animals. They feed on worms; the marine ones on sea-weeds, and, when tamed, will eat almost any thing. They are extremely slow in their motions, and in copulation frequently adhere a month together. They can exist a long time in noxious air; and they are so tenacious of life, that if the head be cut off, or the chest opened, they will live several days. The land tribe are torpid during winter.

The following are specimens of the *marine turtles.*

The *Mydas*, or Green turtle, has the fore-feet two-clawed; hind feet solitary; shell oval, colour dull palish brown:—four other varieties:—with claws pointed, one on each foot;—with beak like the bill of a goose;—with beak like the bill of a fowl;—with plate of the shell very large.

The Green turtle is so named, not from its exterior colour, but from the green tinge which its fat frequently exhibits when the animal is taken in the highest degree of perfection; it is one of the largest of the genus, often measuring above five feet in length, and weighing more than five or six hundred pounds. A native of the West Indies; flesh esteemed a dainty. It has been occasionally taken on the coast of France. They lay their eggs, (many hundreds,) which are about the size of tennis balls, and covered with a smooth parchment-like skin, in holes which they dig in the sand above high-water mark, and which are hatched by the sun in about three weeks.

The *Caretta*, or Loggerhead turtle, has the plates of the back gibbous behind; fore and hind feet two-clawed. In its general appearance this species most resembles the preceding; but is distinguished by the superior size of the head, the proportional breadth of the shell, and its deeper and more variegated colours. It inhabits the West Indies, and is found also in the Mediterranean, particularly about the coasts of Italy and Sicily. Flesh coarse and rank. It is a bold and dangerous animal.

The *Imbricata*, or Hawk's bill turtle, is named imbricata from the scales of the shell lapping over each other at their extremities, like tiles in the roof of a building. The fore-legs of this species are longer than the rest of the tribe; and it is said that, when turned or laid on its back, by their assistance the animal can recover its natural position, which no other turtle can do. Its general length is about three feet; but it occurs sometimes five feet long, and occasionally weighs 500lbs. It is found in the Asiatic and American seas; and sometimes also in the Mediterranean. The flesh in no estimation as food, but its covering, or shell, furnishes the TORTOISE SHELL of commerce, so well known, and used for various purposes.

In order to bring tortoise shell into the particular form required, on the part of the artist, it is steeped in boiling water till it has acquired a proper degree of softness, and immediately afterwards committed to the pressure of a strong metallic mould, of the figure required; and where it is necessary that pieces should be joined, so as to compose a surface of considerable extent, the edges of the respective pieces are first scraped or thinned, and being laid over each other, during their heated state, are committed to a strong press, by which means they are joined, or agglutinated.

The following belong to the *river turtles.*

The *Ferox* has a cartilaginous oval shell, and three-clawed feet; twenty inches long, fourteen broad; about seventy pounds weight; flesh very delicate; fierce, and defends itself by biting; inhabits the rivers of South America.

The *Lutaria*, or Mud tortoise, has the shell flattish, tail half as long as the body. Another variety with a tubular, and a third with a campanulate shell: seven or eight inches long, three or four broad; like other tortoises utters a kind of broken or interrupted hiss; inhabits lakes on the banks of the Tanais, Volga, Ural, other Indian and Eastern rivers, and said also to be found in the Southern provinces of France. Lays its eggs on land, and may be rendered domestic and useful in gardens, but is very troublesome in fish-ponds, wounding and devouring fishes.

The *Pennsylvanica* has the fore-feet five-clawed; hind-feet four-clawed; tail tipt with a sharp horn; smells of musk; inhabits stagnant water of Pennsylvania.

The following belong to the *land tortoises.*

The *Græca*, or Common tortoise, has the feet subdigitate; shell gibbous behind; body tailed; six and a half inches long; four pounds weight; shell oval; plate very convex, and with the skin variegated black and yellow; inhabits Africa and Sardinia; the Greeks are very fond of its flesh and eggs, and drink its blood; lays from four to five white eggs, size of a pigeon's; hides under ground in September, and emerges in February.

The *Pusilla* has the feet subdigitate;

shell hemispheric; when tame eats any thing offered to it, except milk or animal food; abstains from food in winter, and does not go into the water; very slow of motion; inhabits the Cape.

Tortoise shell. See the preceding article.

TOUCAN, or *Rampastos*, a genus of birds consisting of seventeen species, distinguished by an enormous bill, which has a most grotesque appearance, being something like the shape of a mask with a large and long nose, constructed to surprise and frighten children; the tongue is not less singular than the bill; it exactly resembles a feather shut up in a large case. The whole of this tribe build in the holes of trees, which have been scooped out by the wood-pecker; they lay only two eggs; they are spread over all the warm parts of America, and being very sensible to cold, never quit it. They feed principally upon the fruit of the palm-tree, and swallow their food whole. The following are the chief: The *tucanus*, or Yellow-breasted toucan, is blackish; abdominal band, vent, and rump yellow; cheeks, chin, and neck orange; nineteen inches long; feeds upon pepper, as do several other species of the genus; inhabits South America; the natives of Cayenne glue the skin and feathers of the neck of this bird, upon their cheeks, by way of ornament. The *viridis*, or Green toucan, is green, belly yellow, rump red; inhabits like the last; bill not so enormous as some of the other species.

Touch. See FEELING, SKIN, &c.

Touch-me-not. See BALSAMINE.

Touchstone. See GOLD.

TOUCHWOOD, rotten wood, spunk and agaric, which easily catches fire. The most inflammable touchwoods are the different species of the fungus called *Boletus*, or spunk. See SPUNK. It is with some of these species that the *touchwood tinder boxes* are furnished.

Tourmaline. See SCHORL.

TOURNEFORTIA, a genus of plants consisting of eleven species, natives of the West Indies or South America. The following are cultivated: the *hirsutissima*, or Hairy,—the *volabilis*, or Climbing,—the *fœtidissima*, or Fetid, — the *humilis*, or Dwarf,—the *argentea*, or Silvery,—the *cymosa*, or Broad-leaved, and the *suffruticosa*, or Hoary-leaved tournefortia. These are all stove plants, and are to be propagated by seeds obtained from their natural soil.

TOURNIQUET, an instrument used in surgery for stopping the flow of blood into or from wounds in a limb.

This instrument is used in the amputation of limbs, and also to compress the blood vessels, and prevent its effusion from wounded parts. It may, therefore, be sometimes of service in family practice, and on other occasions of sudden accidents, when a surgeon is not at hand.

The manner of using it is as follows; let a cushion of three inches in length by one inch and a half in diameter, be prepared of a linen roller, tolerably firm, but not so hard as to render pressure produced by it very painful. This being placed upon the course of the principal artery of the limb, is to be firmly secured in that situation by one or two turns of a circular roller, of the same breadth with the cushion itself. The instrument, with the strap connected with it, being now placed upon the limb, with the handle of the screw on the opposite side of the member to the cushion upon the artery, the strap is to be carried round the limb, directly over the cushion, and to be firmly connected on the other side of the buckle. In thus connecting the strap and buckle together, it ought to be done with great firmness, so that the screw may operate most advantageously; and so that a single turn of the screw may be sufficient for putting an entire stop to the circulation of the blood in the limb.

Another method of using the tourniquet on the lower extremities is thus: after providing a hard roll of linen bandage, about 4 or 5 inches in width, and 3 in thickness, and also a smooth board 9 inches long, 3 wide, and ¾ of an inch thick, with the sides and ends squared at right angles; the roller is to be placed mid-way in the ham, on the under side of the knee-joint; the leg being extended in a straight line. Next, the piece of board must be laid over the roller, which is to act as a pad of compression on the artery, which extends from the ham over the hollow of the knee; the length of the board running cross-ways, and projecting on the knee joint on each side. The girth of the tourniquet is now to be passed round the knee, above, (not upon) the knee-pan, and over the projecting ends of the board. The screw should rest at the upper part of the limb and the knee-pan, having also a pad interposed between it and the skin. This mode of compressing the popliteal artery allows the arterial circulation to proceed uninterruptedly through the lateral branching vessels; the large superficial veins are not disturbed, and the limb remains in the same state as if the artery alone had been tied. In all cases of profuse hæmorrhages, where there is a chance of saving the limb, in gun-shot wounds, compound fractures, and bleedings after amputation below the knee, this method of applying the tourniquet is generally to be preferred.

TOWER MUSTARD, or *Turritis*, a genus of plants consisting of eight species, chiefly natives of Europe, one or two of America; two, the *glabra*, Smooth, or Tower wort,—and the *hirsuta*, common to our own pastures and rocks. The taste of the *glabra* resembles cresses; it affords food for cattle, and the flowers are visited by bees.

Toxicaria. See UPAS.

Toxicodendron. See SUMACH.

TRACHEA, in anatomy, the windpipe. It is a cartilaginous and membranous canal, through which the air passes into and from the lungs. Its upper part, which is called the larynx, is composed of five cartilages. The uppermost and smallest of these cartilages is placed over the glottis, or mouth of the larynx, and is called epiglottis, as closing the passage to the lungs in the act of swallowing. From the larynx the canal takes the name of trachea, or aspera arteria, and it extends from thence down to as far as the fourth or fifth vertebræ of the back, when it divides into two branches, which are the right and left bronchial tube. Each of these bronchia spreads through the substance of that lobe of the lungs, to which it is distributed by an infinite number of branches, which are formed of cartilages, separated from each other, like those of the trachea, by an intervening membranous and ligamentary substance. See LUNGS.

The complaint called the *croup* consists in an affection of this organ. See CROUP.

Tragacanth. See GUM and MILK VETCH.

TRADE, a specific term including most of the smaller ramifications of commerce, and particularly those called handicrafts. It is, however, sometimes considered as synonymous with commerce.

An opinion that trade is derogatory to the character of a gentleman, is very general among persons who are in the habit of contemplating only one side of the picture of human nature; and it must be admitted that the mere tradesman, confined to one pursuit, and never travelling out of it, is very often confined in his views, and ignorant of the grand social movements around him; but the order of tradesmen of the nineteenth century consists of many persons of a very different cast; men who are not only well acquainted with human nature, but who think and act from the most liberal and enlightened principles; and, thanks to the more general diffusion of letters, and the public press, who are, in this metropolis, and other parts of the empire, some of the most steady, stable, consistent, and well-informed members of the community. The empire of ignorance is rapidly giving way to the empire of *mind*; and mere *learning*, which is only a part of the means for establishing that empire, is not again likely to be mistaken for the end, as in many past ages, and by some persons of the present, it has too commonly been. Mankind have now learnt to measure all talent by the best of standards, UTILITY; considered in this view, surely trade has its utilities, and those of no trifling kind. See COMMERCE.

TRAIN OIL, a term applied to several kinds of fish oil, chiefly cod oil, and inferior whale oil. See COD.

Transplantation. See PLANTATION, and PLANTING.

TRAP, in mineralogy, a term applied to an important series of rocks; the term trap is Swedish, and signifies *stair*; they include *greenstone, basalt, amygdaloid*, and *toadstone*.

Green stone is a compound of hornblende and felspar. *Basalt* is always a homogeneous rock, and abounds in black oxide of iron. See BASALT. Greenstone is met with in many parts of England, immediately upon granite and primary rocks, breaking into large blocks and masses of a very irregular appearance; it is seen in this state at the Lizard Point in Cornwall.

Travellers' Joy. See CLEMATIS.

TRAVELLING. It is scarcely necessary after what we have so often insisted upon in the preceding parts of our work to remind the reader that PRESENCE OF MIND is one of the most important assistants in remedying those accidents which arise in travelling, whether it be in a coach, in any other vehicle, or on horseback.

In travelling by *stage coaches*, or coaches of any kind, it should never be forgotten, that the *inside* of the vehicle, in most accidents, is by far the securest place. That although we cannot often exercise control over the driver of a stage coach, his horses, or the method in which the coach is loaded, yet it will be a part of wisdom, if an opportunity offers, to observe the state of the wheels, the linch-pins, the horses, and whether they are restive or not, the method in which the coach is loaded, &c. &c. and, if any gross impropriety presents itself, to call attention to the proper persons before we proceed on our journey; but if this cannot be done, or be not attended to, our knowledge of the state of the horses, the vehicle, and of the disposition of the coachman, may be of great service to us, should afterwards, any accident happen. If the coach, or any other carriage, should be our own, nothing ought to exempt us from being assured, by personal inspection, that every thing relative to both horse, harness, and carriage, is adjusted, and in a proper state for a journey.

When you are going to ride on *horseback*, before you mount, the trappings of your horse should be carefully examined, in order to see whether the bridle, girths, and stirrups be safe, and well fixed, and the animal properly shod; and if, during your journey, the horse should get unexpectedly lame, you should immediately alight, and examine all his feet: perhaps a shoe is become loose, or a stone has been jammed between the shoe and the frog. The stone, of course, should be immediately removed; and the shoe fastened at the first blacksmith's.

In riding horses, and driving carriages, it should always be a rule, not to ride or drive with a *slack* rein, although a very tight rein is not to be recommended.

If in driving a gig, or other vehicle, the horse should run away, and you should deem it necessary to quit the carriage, whilst it is in motion, you ought not to leap forward from the front; nor is it advisable to jump out from the side; but, if it be possible, leap out behind, taking care not to lean too forward: this is by far the safest method.

Should you meet with a restive horse, which runs backward with your vehicle, do not hold him by the head but lay hold of one of the spokes of the wheel behind, which is the most effectual check.

With respect to providing great coats, umbrellas, &c., when you are going a long journey, and are to be exposed to the weather, whatever may be its present appearance, it is advisable to be provided against the worst: for although heavy clothing be an incumbrance to the pedestrian, to a person sitting even in, or on a carriage, except in very warm weather, they are generally necessary to retain the body in comfortable warmth.

Travelling on foot may not seem to require any precautions. But even here some will be found useful. In setting out upon a long walk, it is always most advisable to begin to walk slowly, and increase the motion by degrees, more especially should this method be adopted if the person is not used to much walking, or if the walk be taken soon after rising in the morning or after long sitting. By these means the muscles will gradually, and with less pain, be accommodated to an increased action. In travelling on foot, precaution should be taken never to drink weak and cold liquors, nor cold water, when the body is exceedingly hot; nor should the pedestrian, warmed with walking, lie down at any time on the ground; neither in the sun nor in the shade. Thirst is perhaps most effectually quenched by eating small portions of fresh fruit, with a morsel of bread, or with very weak spirit and water. Travellers on foot should wear a flannel waistcoat next the skin; and they should avoid damp beds and evening dew, particularly after a free perspiration.

We have described the method of treating feet blistered from walking, under the article FOOT. If the feet are merely inflamed, without being blistered, they may be washed with luke-warm, or milk-warm water on going to bed; but hot water is decidedly injurious.

In travelling, the mischiefs arising from cold are sometimes great; the general management of persons affected by cold, will be found under COLD; but it may be useful here to mention, that when riding in extremely cold weather, in order to keep the extremities warm, and especially the feet, not only should proper clothing, such as *worsted* gloves and stockings, be worn, avoiding tight boots and shoes; but the limbs should be kept as much as possible in motion. When the situation is too confined to allow the feet to be moved freely, and two or more persons are exposed together, as on a coach, it is advisable that they should place their feet, without shoes, against each others breasts. It is also of the highest consequence, whilst abroad, to guard against drowsiness in very cold weather, which may be followed by the sleep of death, if you so far yield as to lie down exposed to the piercing air. If, however, accident should place the traveller in such a situation, and there be snow, the body should be covered as much as possible with it, leaving only an opening sufficient for breathing fresh air.

Before proceeding on a journey, where much cold may be anticipated, a moderate dose of brandy and water may be of service; of course it should not be sufficient to produce intoxication; but immediately after a journey of this kind, if the body be generally very cold, strong liquors are highly improper; cold water is much better. If any parts of the body be benumbed with cold, they should be rubbed with cold water or with snow; and be brought to their usual heat, not suddenly, but by degrees. A brisk walk, if the person be capable of it, will also be useful, till the body is become warm by more gradual means. But hot rooms and all fires should be, in such states, most carefully avoided. See CATARRH.

Treacle. See SUGAR.

Treacle mustard. See SHEPHERD'S PURSE.

Tree. See PLANTATION, and TIMBER.

TREE-CELANDINE, or *Bocconia,* a genus of plants consisting of two species, the *Frutescens,* a Mexican and Jamaica shrub, with a smooth white bark, oblong sinous leaves, and terminal racemes; and the *Cordata,* supposed to be imported from China, with heart-shaped leaves, and panicle with simple branches.

Tree frog. See FROG.

TREE OF LIFE, ARBOR VITÆ, or *Thuja,* a genus of plants, consisting of four species, of which the two following are cultivated.

The *Occidentalis,* or American Arbor vitæ, with a trunk strong and woody, rising to the height of forty feet; the branches are produced irregularly on every side, almost horizontally, the young shoots frequently hanging down; the male flowers grow in long aments; between these the females are collected in the form of cones; a native of Siberia and Canada. Two other varieties, called the American sweet scented, and variegated leaved arbor vitæ.

The *Orientalis*, or Chinese Arbor vitæ, has the cones spreading every way, with sharp scales; bunches erect; leaves brighter green, and the cones much larger than the last; they are also a beautiful grey colour; a native of Japan and China. They may both be increased by seeds, layers, and cuttings; the seeds should be obtained from abroad; the layers made from the shoots of one or two years' growth; and the cuttings from the strongest young shoots of the same age.

Tree trefoil. See LABURNUM.

Trefoil. See CLOVER.

Trefoil moon. See LUCERN.

Trefoil shrubby. See PTELEA.

TREMOLITE, a genus of calcareous earths; it is of various colours, white, greyish, &c. and consists of silica, lime, magnesia, and a small portion of oxide of iron. It is hardish, shining, and brittle, and emits a phosphorescent light in the dark, when struck or rubbed. It is found in Mount Tremola in Switzerland, and also in Scotland.

Trial. See JURY and PRISON.

TRICHIURE, or *Trichiurus*, a genus of fishes consisting of two species, distinguished by a compressed ensiform body; subulate tail; finless. The *lepturus*, or Silver trichiure, inhabits the fresh waters of South America, has the lower jaw longer than the upper; body naked, entirely silvery; three and a half feet long; very voracious, swims rapidly, frequently leaping into boats as they pass by. The *Indicus*, or Indian trichiure, has the jaws unequal; colour brown, spotted; teeth minute; it is in a small degree electrical; inhabits the Indian ocean.

TRICHOMANES, a genus of ferns consisting of twenty-eight species, mostly exotics; a few with simple, the greater number with compound fronds, except the following: the *pyxidiferus*, or Cup trichomanes, found among stones in wet grounds; the *Tunbrigensis*, or Tunbridge trichomanes, found in the fissures of moist rocks in Wales and Scotland.

TRICHONEMA, a genus of plants, consisting of four species, the *Emiciatum*, the *Roseum*, the *Caulescens*, and the *Pudicum*; the corols all agree in every respect except the colour; the most beautiful is the *caulescens*, a native of the Cape.

TRILLIUM, a genus of plants consisting of three species, the calyx three-leaved, corol three-petalled; berry superior, three-celled; all of which are cultivated: they are thus named,—the *cernum*, or Drooping, the *erectum*, or Upright, the *sessile*, or Sessile-flowered trillium; they are all American plants, with dark red purple flowers, and may be easily propagated by seeds, and exposed to the climate of our own country, being hardy perennials.

TRINITY, HERB TRINITY, HEPATICA, or *Anemone hepatica*, a plant well known in our gardens, and flowering in March. It is perennal, a native of Germany, and may be propagated by parting the roots. It was formerly in the materia medica, but is of no importance.

TRIPE, a well known article of food, but one which, except for the healthy and robust, we can by no means recommend.

TRIPLE SALTS, in chemistry, salts composed of an acid, combined with two distinct bases at the same time. Rochelle salt, or tartrate of potash and soda, is a triple salt.

TRIPOLI, an earth, consisting of silica, alumina, oxide of iron, sulphuric acid and water. Colour yellowish grey. It is found in Derbyshire, and there called rotten stone; the tripoli of Corfu is reckoned the best. It is used for polishing stones, metals, and glasses.

TRIUMFETTA, a genus of plants consisting of eleven species, chiefly shrubs, a few annuals, natives of the East and West Indies; two, the *lappula*, or Prickly-seeded triumfetta, a shrub, rising six or seven feet high, with small yellow flowers, a native of Jamaica; and the *annua*, or Annual triumfetta, rising two feet and a half high, with small yellow flowers in loose spikes at the top of the plant, a native of India, are cultivated in our gardens; both require the warmth of the stove.

TROCH, in medicine, a tablet or lozenge. See LOZENGE.

TROCHUS, a genus of univalve testaceous worms consisting of one hundred and thirty-three species, scattered over the globe, chiefly aquatic, but some terrestrial, and found on sands, or in gardens; the shell is spiral, and more or less conic; aperture somewhat angular or rounded, the upper side transverse and contracted, pillar placed obliquely; they are thus subdivided,—erect, with the pillar perforated,—imperforate erect, the umbilicus or navel closed,—tapering, with an exserted pillar, and falling on the side when placed upon the base.

TROGON, or CURUCUI, a genus of birds comprehending nine species, all natives of warm climates, chiefly of Brazil, and are named curucuis, from the similarity of that sound to their voice; the bill is shorter than the head, sharp edged, hooked, the mandible serrate at the edge; feet formed for climbing. The *Curucui*, the chief species, is about ten inches and a half in length; head, neck, and breast of a brilliant green, changing in different positions into a lively blue; wings greyish white, variegated with small lines of black in a zig-zag direction; builds in the hole of a tree; eggs three or four, white, nearly the size of a pigeon's egg; the female during her incubation is supplied with food, carefully watched, and soothed by the song of the male; the French, in St. Domingo, call this species the English lady.

TROPÆOLUM, NASTURTIUM, or *Indian cress*, a genus of plants consisting of five species, natives of Peru; the calyx is one-leafed, ending in a spur; petals four, unequal; nuts three, coriaceous. The *minus*, Small Indian cress, or Nasturtium; and the *majus*, Great Indian cress, or Nasturtium, are cultivated in our gardens; the last is by far the largest in all its proportions, though both admit of varieties, especially in regard to the colour of their flowers; the single sorts may be increased by seeds; the double must be propagated by planting cuttings of the branches in the early summer months. The capsules of the nasturtium are occasionally eaten pickled.

Trope. See FIGURE.

TROPIC BIRD, or *Phaeton*, a genus comprehending three species, distinguished by a sharp, edged, straight, pointed bill, the gape of the mouth reaching beyond; hind toe turned forward; they are as follow:

The *Æthereus*, or Common tropic bird, has the body white; back, rump, and less wing feathers streaked with white; two middle tail feathers black at the base; bill red; two other varieties; length two feet ten inches; flies very high, and feeds on fishes; often seen on the backs of porpoises; seldom on land, except at breeding time; inhabits the tropics.

The *Melanorhynchos*, or Black-billed tropic bird, has the bill black; above streaked black and white, beneath white; nineteen inches and a half long; inhabits Palmerston and Turtle islands.

The *Phœnicurus*, or Red tailed-tropic bird, is of a rosy flesh colour; length two feet ten inches, of which the two middle tail feathers measure one foot nine inches; builds in hollows in the ground, under trees; eggs two, yellowish white, with rufous spots. Inhabits the Mauritius island.

Trough pneumatic. See GAS.

Trout. See SALMON.

TROY-WEIGHT, that mode of weighing certain commodities, in which the pound contains *twelve* ounces; each ounce *twenty* pennyweights, and each pennyweight *twenty-four* grains. See AVOIRDUPOIS, and WEIGHTS and MEASURES.

True love. See HERB PARIS.

TRUFFLE, or *Lycoperdon tuber*, belongs to the genus described under

PUFF BALL, but deserving separate consideration. It is a solid fungus, of a globular figure, which grows under the surface of the ground, so as to be totally hidden. It has a rough blackish coat, and is destitute of fibres. It is found in woods and pastures in some parts of Kent, but it is not very common in England. In France and Spain it is frequent, and grows to a much larger size than in this country. Dogs and swine are there trained to search for it.

The truffle has been arranged, by some botanists, as a separate genus, and named TUBER, of which three species, all common to our country, are described; the above species has been named *tuber globulosum*.

The truffle is well known to our cooks, but neither this, nor the morel, (see MOREL) appears to have any very desirable qualities to recommend it.

Trumpet, the Ear. See EAR TRUMPET.

TRUMPET FLOWER, SCARLET JESSAMINE, or *Bignonia*, a genus of plants, many of them climbers, comprehending fifty-five species, some natives of India, but the greater part of South America. They are subdivided into,—with simple leaves,—with two leaves on each petiole,—with three leaves on a common stalk,—with leaves in finger-like divisions,—with leaves pinnate,—with leaves decompound,—with leaves doubly pinnate.

The *radicans*, or Climbing; the *sempervirens*, or Evergreen; the *catalpa*, and the *capreolata*, or Tendril bignonia, are the chief.

In cultivating the trumpet-flower, the seeds should be sown in pots filled with fresh earth, and plunged in a moderate hot-bed; as the plants grow they should be gradually inured to the open air; and when they have acquired sufficient strength, should be planted against a warm wall. The first division may in general be propagated by cuttings, which should be planted in pots in the spring, before the trees begin to push their shoots, and plunged into a moderate hot-bed; they should be shaded in the middle of the day, and gently watered. When they have taken root they should be gradually accustomed to the open air, and afterwards treated like the seedling plants. The species under this arrangement are chiefly from Carolina, and form trees nearly twenty feet high in their natural climates.

TRUMPETER, or *Psophia*, is a genus of birds consisting of two species, distinguished by a cylindrical, conic, convex bill, upper mandible longer; feet four-toed, cleft. The *crepitans*, or Cold-breasted trumpeter, is black, back grey; breast shining blue green; bill yellowish green; twenty inches long; eggs blue green; inhabits Brazil and Guinea; makes a harsh uncommon noise, not unlike a child's trumpet, and follows people through the streets, persecuting them with its disagreeable cry, so that it is difficult to get rid of them. The *undulata*, or Undulate trumpeter, has the crest of the hind head short, whitish; the body above brown, waved with black, beneath bluish white; breast and belly with a few black spots, on each side of the neck a black stripe; size of a goose; inhabits Africa.

TRUNK FISH, or *Ostracion*, a genus comprehending twelve species; chiefly inhabitants of the Indian seas, and having the body mailed with a complete bony covering. The most beautiful is the *Meleagris*, which is somewhat square, blackish, exquisitely marked with innumerable white spots; from six to eight inches long; inhabits the Southern ocean.

TRUSS, in surgery, a bandage or ligature made of steel and other materials, wherewith to keep up the parts in those who have hernias or ruptures; trusses are of various kinds and constructions, depending upon the ingenuity of the person who makes them, and also the situation of the part in which the rupture appears: thus there are inguinal or femoral trusses for one or both sides of the groin, and umbilical trusses for the navel; they are usually constructed so as to be elastic, and are, therefore, called *spring trusses*. They may be obtained of the Surgeons' instrument makers. The *reverting spring truss*, invented by Messrs. LODGE and BITTLESTON, described in No. 5, of the *London Journal of Arts*, and for which a patent has been taken out, differs from all other trusses, in producing no pressure on the spine, hips, or any part of the back; and appears to be superior to the trusses hitherto in use. See RUPTURE.

TRUSTEE, one to whom something is committed for the use or benefit of another.

In the choice of trustees, whether as executors, in marriage settlements, and other momentous affairs of life, too much care and circumspection cannot be taken. Although it is scarcely possible to perform the duty of an executor or trustee without occasionally taking the advice of persons acquainted with the law, yet it should be an invariable rule never, if possible, to choose any person who is in the profession of the law, either as an executor or a trustee: for we are sorry to remark, that the mind of the mere lawyer is generally the most unfitted for performing such trusts well. He will often too, from the bias to his profession, deem that expedient which a simple-minded trustee would never think of; and, such is the complexity of our laws, excuses and expedients for legal processes and expenses are too readily found. In the choice of trustees, particularly those in marriage settlements, care should be taken that they are not only not lawyers, but that they should be *disinterested*; and that, instead of being the *servants*, they do not, by misdirection in the settlement, become the *masters* of the parties for whose sole interest they are appointed; and, above all, care should be taken that the trustees be removeable at the pleasure of the parties for whose interest they act. See EXECUTOR.

Tub-fish. See GURNARD.

TUBE-WORM, or *Sipunculus*, a genus of worms consisting of two species, the *Nudus*, eight inches long, found under stones in the European seas; and the *Saccatus*, like the former, but having the body covered with a loose skin like a bag; found in the American and Indian seas.

TUBIPORE, or *Tubipora*, a genus of zoophyte worms consisting of ten species, inhabiting the shores of the Baltic, other Northern, the Indian, and American seas. The *Musica* is a bright scarlet, and consists of an assortment of upright parallel tubes, rising over each other by stages, like the cells of a honeycomb, divided by transverse partitions; found fixed to rocks and corals in the Indian and American seas; the Indians are said to use it in cases of strangury, and wounds inflicted by venomous animals. The *Serpens* is white or pale red; the incrustations composed of small and almost parallel tubes; it is cast frequently on the shores of the European, Baltic, and American seas; and the only one found on our own coasts; adheres to fuci and coralline. See MADREPORE.

TUBULARIA, another genus of zoophyte worms, consisting of twenty-six species, inhabiting the seas of Europe and America, chiefly the Mediterranean; one or two found in stagnant waters; nine on our own coasts. The *Magnifica*, has a simple whitish tube, and numerous tentacles, variegated with red and white, and is by far the largest and most splendid of the genus; like the rest of the tribe, it has the power of withdrawing the tentacles within the tube, and the tube within the rock on which it resides; inhabits the West Indies, adhering to rocks. The *Splanchnia*, is horn colour, with numerous tubes; two inches long; not thicker than a horse hair; an inhabitant of the Mediterranean. The *Repens* is crested, with radiate cirri on each side; inhabits the stagnant waters of Europe, and often found on the leaves and stems of the water lily, resembling a white gelatinous mass.

TULIP, or *Tulipa*, a genus of plants consisting of five species, as follow:

The *sylvestris*, Wild, or Yellow tulip, a native of Europe, and found occasionally in our chalk pits. The *gesneriana*, or Common garden tulip, is a native of Cappadocia, or the South of

Europe. The ***suavolens***, or Sweet smelling tulip, of the South of Europe. The ***biflora***, or Double-flowered tulip, a native of Russia. The ***breyniana***, or Cape tulip, a native of the Cape of Good Hope.

The first two only are cultivated; the former not very often. It is distinguished from the latter by the flower being nodding, the leaves narrow, the base of the stamens and tips of the petals hairy, the pollen yellow instead of black, the anthers remarkably long, and the flower fragrant.

The Garden tulip, or Gesner's Turkey tulip of Cappadocia, as it is often called, is, in its different and splendid varieties, of almost all colours, and blended diversities of colours. Those in the highest estimation are the blacks, golden-yellows, purple-violets, rose, and vermilion; those which possess most of these, or any three of them, and are striped with them in distinct and unmixt colours, the streaks being regular with little or no tinge of the breeder, may be called the most perfect flowers. Such are, however, rare.

The Double tulip is often a variety of the garden tulip.

The best tulip roots, and indeed the best bulbous roots of every kind, are obtained from Holland.

Tulips are generally divided into three classes: the early, the middling, and the late. The early ones flower in February. The roots of these should be planted in the beginning of September, under a warm pale, or hedge. The proper soil for them is pasture land, with the turf rotted among it, and a mixture of one-fourth part sand. When their flowering is over, and their leaves decay, the roots should be taken up and laid in a dry place, and be afterwards cleaned, till the following September. The late flowers are propagated from *breeders*, which are plain flowers, brought over principally from Flanders; these by culture are changed into striped or variegated ones. They are also propagated by sowing the seeds; but this requires great care, as in the raising all other fine flowers from seeds. The seeds should be saved from the choicest flowers, and sowed in shallow pans or boxes of earth in September: the following spring the young plants will appear like grass or young onions. The boxes should be placed so that they may enjoy the morning sun, and be defended from sharp winds and frosts. At Michaelmas of the following year, they should be transplanted into beds, at two inches distance from one another, and two inches deep. In October an inch depth of new earth should be sifted on them, and they should remain two years in these beds. At the end of this time they will flower, and the best may be marked with sticks, that their roots may be distinguished when the leaves are decayed. The breeders being thus raised are to be shifted every year into fresh earth, and they will in time break out into very fine stripes. When fine tulips are obtained, they must always be propagated by offsets from the roots; and after tulips have flowered, their heads should be broken off, to prevent their seeding, which would make their flowers much worse the next year.

TULIP-TREE, or *Liriodendron*, a genus of plants containing four species, natives of America or China. The best known, and most commonly propagated, isthe *Tulipfera*, with a large upright trunk, that branches forty or fifty feet high; leaves three-lobed, four or five inches long, and their breadth nearly equal. It flowers in July; the corol consists of six petals, and, like that of the tulip, is spotted or striped with red green, white, or yellow. The corol is succeeded by a large cone, which never ripens in England; a native of South America.

TUN, a large vessel or cask. It also implies a liquid measure of four hogsheads, or two pipes. See TON.

Tumour. See ABSCESS, CANCER, SCIRRHUS, and SCROFULA.

TUNBRIDGE WATER, a chalybeate water obtained at Tunbridge Wells, a town in Kent. It is recommended in a variety of complaints incident to the female sex, in menorrhagia, fluor albus, chlorosis, &c. For its mineral contents see MINERAL WATERS.

TUNGSTEN, a metal of an iron colour, very hard, brittle, and difficult of fusion; its specific gravity is 17·5. By the action of heat and air it is converted into an oxide of a yellow colour.

This metal is obtained by exposing a mixture of tungstic acid and charcoal to a strong heat. Peroxide of tungsten, or tungstic acid, may be obtained from two native combinations, one called *wolfram*, the other tungstate of lime. Wolfram abounds in primitive countries, generally accompanying tin ores; its colour is brownish, or black; it occurs massive or crystallized; it abounds in Cornwall. It consists of tungstic acid united with iron and manganese. It may be decomposed by ignition with three times its weight of nitre; the fused mass furnishes a precipitate of peroxide of tungsten, upon the addition of muriatic acid.

Tungstate of lime is a white semi-transparent substance, found in England, Saxony, Bohemia, and Sweden; it occurs crystallized and massive. It may be decomposed by fusion with four parts of carbonate of potash, the fused mass is digested in about twelve parts of boiling water, and filtered. Nitric acid precipitates the peroxide.

Peroxide of tungsten is tasteless, and insoluble in water; its specific gravity 6. It combines with several of the metallic oxides, and has been found to give permanence to vegetable colours; hence it may probably be of use in dyeing; but neither this nor the metal has been much attended to.

Tungstic Acid. See TUNGSTEN.

Tunny, or *Thunny*. See MACKAREL.

Turbot. See FLAT-FISH.

Turf. See PEAT.

TURKEY, or *Meleagris*, a genus of birds consisting of two species, distinguished by a conic incurvate bill; head covered with spongy caruncles, chin with a longitudinal membranous caruncle; tail broad, expansile; legs spurred.

The *Gallipavo*, or Common turkey, is above three feet and a half long, domesticated every where, and varies much in its colours; in a wild state, lives in woods, and feeds on nuts, acorns, and various insects; originally a native of America. It was introduced into England in the reign of Henry VIII. There are several varieties of this species, which are, probably, constantly increasing in number by domestication. In their wild state turkeys are much larger, more hardy and beautiful, than in captivity. The turkey, which with us is so tender when young, multiplies abundantly in the large forests of Canada, which are, a great part of the year, covered with snow. They are also found in great plenty in almost every part of America and the West Indies, constituting a great part of the food of the natives, although never reduced by them to a state of domestication. Hunting the turkey is a sport in which the savage delights.

The *Satyra*, or Horned turkey, has the head with two horns; body red, with eye-like spots; horns callous, blue, bent back; caruncle of the chin dilatable, blue, varied with rufous. Female has the head covered with feathers, is hornless, and without gular caruncle; feathers of the head and upper part of the neck black-blue, long, decumbent; rest of the body as in the male; something less than the common turkey; inhabits India.

The common turkey is a sluggish, cowardly bird, formidable in appearance only. A common game cock will attack many at once, and, from his activity, frequently comes off unhurt. The turkey has an antipathy to red colours. The best turkeys in this country are bred in Norfolk.

In breeding turkeys one cock will be sufficient for six hens.

The hen will cover, according to her size, from nine to fifteen eggs; and, unless attended to, will perhaps steal a nest abroad, in some improper and insecure place. The turkey hen lays a considerable number of eggs in the spring, to the amount of from eighteen to twenty-five and upwards: and her term of incubation is thirty days. She is a most steady setter, and will sometimes continue upon her eggs until almost starved, rather than quit her nest: hence the necessity of providing her with food and water.

As soon as any of the young turkeys are out of the shell, they must be withdrawn from the nest, and kept warm till all are hatched; if this course be not adopted, the hen may quit the nest with those already hatched, and the remainder of the eggs be unproductive. The hen and brood must be housed during a month or six weeks, according to the weather. The first food should be curd and barley-meal, kneaded with milk, and frequently renewed, with clear water rather than milk, which often scours them. Sometimes, when the chicks appear sickly, and the feathers ruffled from cold, or severity of weather, half-ground malt may be mixed with the barley-meal; and, as a cordial medicine, bruised caraway, or coriander seeds. *Artificial worms*, (or boiled meat pulled into strings) will be also a useful food. This kind of diet, it should not be forgotten, is beneficial for every other kind of chicken equally with the turkey. Superfluous moisture, both internal and external, is very injurious; all slop victuals should be therefore avoided. The above substantial food will, in general, be found the best; nor will it be necessary to collect, as some persons do, ants' eggs and nettle seed; or give them clover, rue, or wormwood, as some good housewives direct. Eggs, however, boiled hard, will be equally proper with curd.

The utmost *cleanliness* in rearing turkeys is necessary; and a dry gravelled layer will be also proper. A fresh *turf* of short sweet grass, cleared from snails and slugs, which scour the chickens, is also very agreeable for them. If the weather be fine the hen may be cooped in the forenoon for an hour or two, in the sunshine, whilst the chicks are only three or four weeks old. At the end of six weeks their confinement within doors should cease; after which it is more safe to coop the hen for another fortnight. When half grown, and well feathered, they become sufficiently hardy, and, in a good range, will provide themselves through the day, requiring only to be fed at morning and evening; if confined to the poultry-yard their food and treatment are similar to the common hen. We may observe, by way of caution, that turkeys are very destructive in gardens, eating almost all kinds of fruit; gooseberries, currants, apples, &c.

These animals are fattened with sodden barley, or barley and wheat-meal mixed; their food and treatment are, however, generally similar to other fowls.

The flesh of the turkey, as food, is very similar to the domestic fowl; to which, for the valetudinarian, it is certainly not superior; but it is much better suited to the dyspeptic than the flesh of the goose. The *stuffing* usually dressed in the turkey by the provident cook is no addition to its nutritive qualities, and, where dyspepsia is present, it should not be eaten.

TURKEY-BERRY-TREE, Clammy Cherry, or *Cordia collococca*, a species of the genus Cordia, which consists of eighteen species, scattered over Asia, Africa, and America; the following are the chief. The *Myxa*, which grows to the height of a middling plum-tree, having ovate glabrous leaves, and white flowers; the fruit is eaten in Turkey, and the wood is often used to promote fire by friction. The *Sebestena* sends forth shrubby stalks, eight or ten feet high; leaves oblong, rough; flowers in large clusters, of the shape and colour of marvel of Peru, and are highly beautiful; the fruit eaten like the preceding; and the wood, in burning, yields an agreeable odour. The *collococca*, the first-named species, is a native of Jamaica, with oblong-ovate, very entire leaves, flowers in corymbs.

TURKEY-STONE, Novaculite, Whetstone, or *Ardesia novacula*, a species of slate, which is sub-opake, shining within, hardish, greenish grey, and makes a white mark; receives an imperfect polish, hardens in the air and in oil, and when saturated with the latter, makes an excellent whetstone; found in schistose mountains, forming considerable layers, chiefly in the Levant, near Lauerstein in Bareith, Freyburg in Saxony, and in Siberia.

Turkey wheat. See MAIZE.

TURLINGTON'S BALSAM, a quack medicine, which is made thus: Take of the roots of angelica, and of elecampane, of each four ounces; of benzoin and guaiacum, of each two ounces; of socotrine aloes six drachms; of balsam of Tolu one ounce; of liquid storax half an ounce; of rectified spirit of wine one quart. Let all the ingredients be bruised separately, and afterwards digested in the spirit of wine, in a vessel closely stopped, for at least fourteen days, shaking them every day; afterwards pour off the clear balsam.

This is of similar qualities to the compound tincture of benzoin, see BENZOIN; it may be also used for the same intentions, both internally and externally. The dose internally may be from 15 drops to 30, or more.

TURMERIC, or *Curcuma*, a genus of plants consisting of two species, both natives of India. The *Rotunda*, has ovate lanceolate leaves; stemless, but having pale spiked flowers; the root an ovate bulb. The *Longa*, has lanceolate leaves, is stemless, with a fleshy palmate root; flowers white, sessile. The root of both species is imported in its dried state, and for the same purposes; chiefly for dyeing yellow; but it yields a fugacious colour. The yellow of turmeric is rendered somewhat paler by acids, but it is changed to a brick-red by the alkalies and alkaline earths; hence, to the chemist it is an excellent test for the presence of these substances. For such purposes a spirituous tincture, or watery infusion, may be used. Powdered turmeric is occasionally used to impart a colour to cakes, and other pastry. It was also formerly in the materia medica, and is still given by some farriers to horses and cattle, but its virtues are very trifling. *Zedoary* appears to be a species of turmeric, and is, by the most recent arrangement, placed under this genus. See ZEDOARY.

TURNERA, a genus of plants consisting of nine species, natives of the West Indies and South America. One, the *ulmifolia*, or Elm-leaved turnera, having a shrubby stem, rising eight or ten feet high, with ovate lanceolate leaves, and a large and bright yellow corol, is cultivated in our hot-houses.

Turner's cerate. See CALAMINE.

TURNING, in mechanics, a very ingenious and useful art, by which a great variety of articles are manufactured, by cutting or fashioning them while they revolve upon an axis, or line, which, in most cases, remains immoveable.

The simplest process of turning is that of the potter, who, in the first stage of forming his ware, sticks a piece of soft clay upon a wheel, or flat table, while it revolves horizontally, and in this state of rotation of the clay he fashions it with the greatest facility into vessels of every description. But in most operations of the art the revolving body is cut, or shaved, by applying a chisel, or other suitable tool, to its surface while in motion. The instrument, or apparatus for these purposes, is called a LATHE, or *turning lathe.* Some small kinds of turning are, however, effected by the motion of a bow and catgut string, used by the hand.

The *turning lathe* is a most useful machine, and is wrought either by a wheel turned by a treadle, as seen in a razor grinder's apparatus;—by a second person;—by an elastic pole, to which a cord is attached, which is wound round the article, or something attached to the article to be turned, and made to operate by a treadle, which is moved by the workman himself;—or by some other moving power, such as water, the horse, or steam.

The lathe operates by affixing the piece of work in such a manner that it shall revolve upon a fixed axis, or central line; and a cutting tool being held firmly, so as to intercept it in its revolution, cuts it to the required figure;

by these means any circular solid may be formed. Wood, metals, stone, horn, ivory, bone, &c., may all be formed by this process, and proper tools, into a variety of elegant and useful forms.

An improvement in the turning lathe, by Mr. **Lane**, which is described in the XXXVIth Vol. of the Transactions of the Society of Arts, consists in making the line to run double, and in affording an easy way of regulating the pressure: hence the line is always kept tight and ready for use.

For colouring various turned articles see **Bones** and **Wood**.

TURNIP, or *Brassica rapa*, a well-known plant, of which there are several varieties, cultivated both for agricultural and culinary use.

Turnips are distinguished into two kinds, those with *round*, and those with *long* roots. Of the first kind, chiefly known to cultivators, are the *round red*, or *purple-topped*, the *green-topped*, the *white-topped*, the *yellow*, the *black* or *red-rooted*, and the *Dutch turnip*. Of the second kind the *tankard*, the *tap-rooted*, and the *pudding* turnip are best known.

All the varieties of the first kind are better adapted for cultivation in the field, when there is danger of their being exposed to the severity of frost; but in other cases, as food for early period for suckling ewes, or fattening such sheep as are forward, the latter kind are esteemed the most advantageous. The first sorts, are, however, in general preferred, as being most secure from the dangers of frost; and of these the red-topped was formerly much esteemed, but it has given way to the green-top and the white-top, which (with another sort, the great round Norfolk turnip, although this last grows almost entirely above the ground,) seem to obtain the preference for agricultural crops. The early Dutch is seldom seen except in gardens.

The soils most suitable to turnips are the light loamy, or deep medium sandy kinds; they will also do well on thin gravelly, or chalky soils, and even on loamy clays when not too retentive of moisture, provided proper attention be paid to the preparation and manuring such land; and, indeed, from the successful culture of this root on different soils, it admits of more latitude in regard to soil than many other plants.

Wherever turnips are sown, it is essential that, at least, the superficial parts of the land should be brought into a fine state of pulverization before the seed be sown: more depends upon this than even on the richness of the soil; and where the turnip husbandry is carried on in the most complete manner, four or five ploughings, with necessary harrowing and rolling, when the seed is put in on a fallow, are generally given to the land. When, however, the seed is put in after grain, early peas, tares, or other similar crops, the preparation is seldom extended to so many ploughings; in such cases two or three ploughings only are given. Manure for this crop may be of various kinds; lime is very useful on many soils; marl, dung, and composts of various kinds, are also employed with advantage. But dung in particular ought to be deposited in the soil, as nearly as possible to the period at which the seed is sown. Rape-cake powder, as a manure, may be drilled with the seed.

The quantity of seed per acre, *broadcast*, must vary according to circumstances; from one pound to a pound and a half, or even two pounds, are sometimes employed. But in the *drill* method a smaller quantity is sufficient. The best practice recommends that, previously to the seed being sown, it should be always steeped a few hours in water, before it is committed to the soil, more especially if the season be dry.

The time of sowing must depend upon the uses to which the turnips are to be applied. For early consumption the beginning of June will be proper; but when the turnips are designed for the food of cattle in the early spring months, the end of June, or beginning of July is better; but when turnips are cultivated on an extensive scale, the times of sowing might be more various than these, with much advantage: some may be sown as early as May; but these are neither so sweet, nor do they succeed so well as those sown later. In sowing later than July care should be taken that it be not deferred so long that the plants have not time to cover and fix themselves well in the soil before their growth is restrained by the colds of autumn and winter.

Various methods have been invented for drilling turnips. The best is supposed to be that invented by Mr. JOHN COMMON. The instrument is called the *Double-drill turnip sower.* A description of this instrument, with a plate, may be seen in the 36th Volume of the *Transactions of the Society of Arts.*

The *drill* method is said to be, upon the whole, the most advantageous for turnip crops; but broadcast is, nevertheless, still much practised.

The *after culture* of this root is of the utmost importance to its profitable produce; this culture is to be accomplished by means of the hoe. When the seed is sown broadcast, the hand-hoe only can be employed; but when the seed is sown in rows by the drill, and a sufficient space allowed, the horse-hoe can be used, either alone, or in addition, after the plants have been properly thinned out by the hand-hoe. The operations of hoeing should be begun when the plants have produced four or five leaves, or when they cover a circle of from three to four inches in diameter; which, in kindly seasons, will in general happen in about a month or six weeks from the time of sowing. In the first hoeing, such plants which stand too close, must be thinned out to a suitable distance, according to circumstances, and the use to which the crop is to be applied. When the season is hot and dry, the thinning, in the first hoeing, should not be at too great a distance; but in rich soils, when early sown, and intended to be consumed at an early period, by cattle, more thinning at first may be advantageous. The common custom is, to leave the plants, in the first hoeings, at the distance of from six to eight inches apart; a greater distance is, however, sometimes given. In the second hoeing, which should be performed in the course of a fortnight or three weeks from the first, the plants which are to remain for a crop, may be left at the distance of from ten to twelve or fourteen inches in the broadcast practice; and at from nine to fifteen, or sometimes more, in rows where the drill is employed.

In the second hoeings the mould between the plants should always be well stirred, and the weeds effectually destroyed. The future hoeings of the crop must be regulated by the particular circumstances of the case; but the mould should be never allowed to become too compact about the roots of the plants, nor weeds be suffered to interfere with the crop. It is obvious that hand-hoeing is not only more troublesome and expensive, but more confined, and less beneficial in its effects than the horse-hoe, or plough. And this consideration determines the superiority and utility of drilling this crop.

Turnip crops are exposed to danger from different causes during the early stages of the growth of the plants; but the chief are the attacks of the fly, probably a species of aphis, the slug, and the black caterpillar. Various means of preventing the young turnip plants from being destroyed by these animals have been suggested; for the fly, (see FLY) slacked lime is, beyond a doubt, the best hitherto known; but none which can be considered as completely effectual. Their safety and preservation depend, most probably, greatly on the land being so enriched by manure, and in such a condition in respect to moisture, as that the germination of the seed, and after-growth of the plants, may be such as to render them quickly in the state of rough leaf.

To obviate the effects of the slug, (an animal of the white snail kind,) rolling in the night with a roller of considerable weight has been recommended. Such practice has been recommended also for the fly. And not only lime, but ashes and soot in fine powder, scattered over the turnips by hand, may be employed against the ravages of both these animals; from fifteen to twenty bushels per acre is the quantity recommended of each of these articles. An infusion of tobacco has also been recommended to be sprinkled on the young turnips, as a remedy for the slug; and barley chaff, scattered over the whole crop, immediately on its first appearance, may be one of the best remedies. Against the ravages of the black caterpillar, nothing effectual has been devised, although the infusion of tobacco and barley chaff have been also recommended for it.

The turnip is subject also to a disease in its root called *anbury*. It appears as a large excrescence below the apple of the bulb, which ultimately becomes putrid, and sends forth a most offensive smell; the cause of this is not exactly known; but wherever such diseased turnips appear, they should at once be removed.

When the *mildew* appears on this crop, the best remedy is thinning and well hoeing, and stirring the earth about the roots of the plants.

The produce of turnip crops varies greatly. A medium crop may afford fifteen tons, or more, per acre; but it will frequently be much less. An acre of good turnips will fatten a beast of about forty stone; or eight sheep. The most advantageous mode of feeding cattle with turnips is said to be in the stall; but the nature of the animals by which turnip crops are consumed, must obviously introduce differences in the manner of their application; the most common practice, however, is to pull them up and scatter them on some convenient dry ground in the state of grass or stubble, where the cattle eat them: they should not be scattered so thickly over the ground as to be bruised by the feet of the animals. But it should not be forgotten that feeding off turnips on the land on which they grow, is often the most profitable method, in consequence of the manure produced by the dung of the cattle. When, however, they grow on light land, sheep should be folded on them; if the land be strong or wet, the crop should be drawn and fed in some adjoining grass field or shed. If the land be in high condition, it is customary to cart off half the turnips, and eat the other on the ground. But this plan should not be adopted on poor soils.

It is said that turnips may also be applied with advantage to feeding milch cows, but all the leaves of the plants should be carefully removed; they may also be applied to the feeding of horses.

In cultivating turnips for seed, some attention is necessary. The most certain method of obtaining good seed, is to select such turnips as are of the best kinds, and of the most perfect form, from the field crops; and, after cutting off their tops, to transplant them about the month of November or December, into a piece of ground which has been well prepared by digging or ploughing, and which should be as near the house as possible, in order that it may be most effectually preserved from the birds. The seed will in general be ready for gathering in the July or August following. It is best preserved by being thrashed, as soon as it is ripe, on the spot where it grew.

The white and purple-rooted turnip are the kinds raised for the table in this country; they thrive best in a dry sandy soil, that is not too rich; they are always best tasted when produced on fresh, not worn-out lands; the common time of sowing them is from the beginning of July to the middle of August; but the gardeners about London sow them every month from March to August, that they may have a constant supply.

Of turnips, as human food, we cannot speak greatly in commendation. It appears by Sir Humphry Davy's experiments, that 1000 parts of this root contain but 42 of soluble or nutricious matter; of these, 7 parts are starch, 34 saccharine matter, and 1 gluten or albumen.

TURNIP FLY, a species which has generally been arranged under the genus **CHRYSOMELA**, a tribe of coleopterous insects, having mostly an oval body, and consisting of three hundred and forty species, scattered over the globe; it is a beautiful tribe, and found almost every where in woods and gardens; the turnip fly is, however, supposed by some naturalists to be a species of *aphis*. See PLANT LOUSE. For the best method of destroying this fly, see TURNIP and FLY.

TURNIP, the SWEDISH, or RUTA BAGA, is a root of the turnip kind, and considered by some as a variety of the yellow turnip, but it differs greatly from it both in texture and properties. In its top it has something the appearance of the rape or cabbage; the bottom, or that part of the root which is above the ground, is covered by a thick, green, tough skin; the internal part is dense and firm, and has a yellowish tinge.

The chief inducements to the cultivation of this root are, it lasts through all frosts, and may be depended on for sheep quite through the month of April, though drawn two months before, and spread on a grass field;—that it is an excellent and nourishing food for sheep, and also for any sort of cattle;—that it is equal to potatoes in keeping stock swine;—that it is, next to carrots, the very best food which can be given to horses; and that it is sown at a season, (from about the tenth of April to the tenth of May,) which leaves ample time, in case of failure, to put in common turnips or cabbages. It may be grown also to advantage on most of those soils which are too moist and heavy for the common turnip; the same preparation of the land for this crop is necessary as for the turnip; the seed should be always selected from such plants as have been transplanted; the quantity of seed broadcast is from two to three pounds per acre; when it is drilled, a smaller quantity is sufficient. It is advisable, previously to sowing this seed, as well as turnip, to steep it in water for some hours. Different methods are adopted in rearing this crop. Sometimes the plants are reared in beds and transplanted into the field in rows, at a distance of eight or nine inches from each other, and a foot or more in the intervals; they should be transplanted, if possible, in moist weather. But transplantation is not usually adopted where this plant is grown extensively. In the *after culture*, the same attention to hoeing is necessary as for the common turnip.

This root is said to be superior in nutritive qualities, for cattle, to the common turnip; but, from its hardness, it is generally considered injurious to the teeth of cattle. Upon the whole, however, it is a root deserving the attention of the English farmer. The whole quantity of soluble or nutritive matter in 1000 parts of this root is, according to SIR HUMPHRY DAVY, 64, of which 9 parts are starch, 51 saccharine matter, 2 gluten or albumen, and 2 extractive matter.

TURNSOLE, a name given to a valuable dyeing drug, said to be prepared in the South of France, from the *croton tinctorium*. It is, we believe, occasionally obtained from other plants: but the history of it does not seem to be accurately known. See LITMUS, and WILD RICINUS.

Turnpike road. See HIGHWAY, and ROAD.

Turnstone. See LAPWING.

TURPENTINE, or *Terebinthina*, the resinous exudation from different species of the pine. It is sometimes a spontaneous product, but more frequently, we believe, obtained by art, by making incisions in the tree. See PINE.

Turpentine has been generally distinguished into *common turpentine*, *Strasburgh turpentine*, *Venice turpentine*, *&c.* In the shops, however, those usually known are Common, or Horse, Venice, and Chio turpentine. Horse turpentine is also called by the dealers in turpentine, strained turpentine. It is of a yellowish white colour, somewhat opake, and of the consistence of honey. It is sold as being merely the turpentine obtained from the pine, freed from impurities, but there is reason for believing that it contains a portion of some fixed oil.

Venice turpentine, although said in most books to be an imported article, is never sold as such in the shops. It is usually made either by melting black resin, and after removing it from the fire, mixing with it gradually an equal weight of oil of turpentine; or as follows: Take of unstrained turpentine, commonly called frankincense, three pounds and a half; of oil of turpentine one pint and a half; of linseed oil one pint. Melt the unstrained turpentine over a moderate fire, and when it is melted and removed from the fire, add gradually the oil of turpentine and linseed oil previously mixed Lastly, strain the whole, whilst hot, through a hair sieve.

Crude, or unstrained turpentine, is imported in casks from various countries, chiefly at the present time from America. It is this article, when hardened by age, that is called the *frankincence* of the shops; it is from this article also that oil of turpentine is distilled; and the residue of which is the common *yellow* resin; *black* resin is merely yellow resin deprived of more of its terebinthine matter by a still greater degree of heat. The uses of the resins are too well known to need being described here. See RESIN. Horse turpentine is used for various purposes in the arts; and also in the preparation of some detergent ointments. Venice turpentine is also used for similar purposes.

All the turpentines have a peculiar, somewhat aromatic odour, and a warm, pungent, bitterish taste; they are of different degrees of consistency, tenacious, more or less translucent, combine readily with fixed oils, and are inflammable, burning with a white flame and much black smoke, which, condensed, is the *lamp black* of commerce. See LAMP-BLACK.

Oil of turpentine, sometimes, but improperly, called *Spirit of turpentine*, is obtained from crude turpentine, by distilling it with water in a common still. A colourless, limpid, strong, penetrating fluid comes over, having a peculiar odour, and a hot, pungent, bitterish taste; it is also extremely light, volatile, and inflammable; it dissolves in hot alcohol, and again separates from it as the spirit cools; in all other respects it agrees with the other essential oils; the residuum left in the still is yellow resin.

Oil of turpentine is used for various purposes in the arts; chiefly, however, as a medium for mixing paints; white lead, ground in this fluid, forms the *dead white* so well known to painters.

As medicines, the turpentines and their essential oils are stimulant, cathartic, diuretic, and anthelmintic; and externally rubefacients, as well as being sometimes usefully applied to promote the healing of many wounds. See BASILICON and BURGUNDY PITCH. The turpentines appear, however, to derive their virtues from their essential oil. They are sometimes given internally in gleets and gonorrhœas, and in mucous obstructions of the urinary passages; the oil of turpentine is regarded as a useful remedy in lumbago, sciatica, &c.; it has also lately been very successfully given, in unusually large doses, for the expulsion of the tape-worm. See WORMS.

It is also said to be useful when dropped into the ear, either alone, or mixed with oil of almonds, in deafness from defect of wax; and it is an excellent addition to embrocations in acute rheumatisms, bruises, and paralysis of the extremities. As a discutient it is also applied to indolent tumours, and is said to be a useful primary application to burns. See LINIMENT.

The doses of any of the turpentines, when given internally, which they rarely are, may be from ten grains to one drachm, either made into pills with powdered liquorice root, or diffused in water by means of almonds, mucilage, or yolk of an egg; the dose of the oil may be from ten drops to one drachm to produce its diuretic effect. It is very remarkable, that if two fluidrachms of this oil be given for a dose, it sometimes so excites the urinary organs as to produce even bloody urine, whereas, when given in much larger doses, its chief action is on the bowels, scarcely producing any apparent effects on the urinary secretion. For the expulsion of the tape-worm, therefore, it is necessary, and perfectly safe, to give from half a fluidounce to two fluidounces, repeated every eight hours till the worm is discharged. In these large doses it is most easily taken like castor oil, floating upon some liquid vehicle. Oil of turpentine is the most certain diuretic for the *horse* with which we are acquainted. It is said also to be a good remedy for the flatulent colic of horses; the dose, for such purpose, is from two to four ounces mixed with gruel. It has also been lately given with success for the worms in horses. See WORMS.

All the turpentines and their essential oil, impart to the urine the peculiar odour of the violet; not only when taken internally, but breathing in a room impregnated with the odour of turpentine, produces the same effect.

Chio Turpentine is of a more delicate smell than common turpentine; but it is scarce, and little known. See PISTACHIA.

Turpentine varnish. See VARNISH.

Turpeth. See BINDWOOD.

Turtle. See TORTOISE.

Turtle-dove. See PIGEON.

Tushes, or *Tusks*, *of a horse.* See AGE and TEETH.

Tutenag. See ZINC.

TUTSAN, PARK-LEAVES, or *Hypericum Androsæmum*, is an indigenous perennial, growing in woods and moist hedges, and is occasionally cultivated in gardens, where it flowers in July and September. It has a powerful and singular smell. The leaves have been recommended for keeping moths out of books, &c.; but it is a species of St. John's wort, of little importance in any way.

TUTTY, POMPHOLYX, or *Tutia*, a grey oxide of zinc. It is generally formed by fusing lead ore, mixed with blende, when it is incrusted in the chimneys of the furnace. Being finely levigated and mixed with any common cerate, such as spermaceti, it is applied to the eyes in debilitated states of the conjunctive membrane.

TWAY-BLADE, or *Ophrys*, a genus of plants comprehending thirty-three species, some with branched, but the greater number with round bulbs; chiefly Cape plants, but ten common to the woods, pastures, spongy heaths, or marshes of our own country. The following are cultivated: The *ovata*, Common ophrys, or Tway-blade, with numerous flowers of a fragrant musky scent, in a loose spike, four inches long, yellowish green. The *spiralis*, Spiral ophrys, or Triple lady's traces. The *nidus avis*, or Bird's nest ophrys, with loose spikes of herbaceous flowers, resembling gnats. The *musifera* or Fly ophrys, with flowers resembling a fly The *apifera*, or Bee ophrys. The *anthropophora*, or Man ophrys. All these afford variety, and are highly ornamental, in clumps, borders, and other parts of shrubberies. They are propagated by any of the common methods.

Twite. See FINCH.

Tyger. See CAT.

TYMPANUM, in anatomy, the drum, barrel, or hollow part of the ear, in which are lodged the bones of the ear.

TYMPANY, or *Tympanites*, a disease in which the abdomen is distended with wind, and sometimes, when struck, it sounds, whence its name; in this disease, whilst the belly swells, the rest of the body wastes.

Persons who have been long troubled with flatulencies in the stomach and intestines, women after abortion, and both sexes from suppression of the hœmorrhoids; and sometimes from tedious fevers improperly treated, are most liable to this complaint.

It is commonly an obstinate disease, often proving fatal by degenerating into an ascites.

In the cure of this disease the best medical advice should at once be obtained. But, nevertheless, the greatest attention must be paid to diet and regimen. Nothing of a flatulent nature should be taken. The bowels should be relaxed by aloetics. What is said under aliment, appetite, costiveness, dyspepsia, &c. &c., must be religiously attended to; and, if the patient can bear it, horse exercise, as well as other exercise, which will bring into action the abdominal muscles, may be advantageously adopted; frictions of the body may also be of service.

Tympany, of cattle. See BLOWN.

TYPE, a term employed by printers to denote the letters used in printing.

The first printers usually cast their

own letters; but for some time past the *type-founder* has become a separate business.

The first part of this business is to prepare the metal, which is a composition chiefly of lead and regulus of antimony, melted together in a furnace, with the addition of pitch and tallow, to promote their fusion. In extensive founderies it is always prepared in large quantities, but cast into small bars of about 20 pounds weight.

A type founder will cast upwards of three thousand letters a day; the perfection of letters consists in their being all straight and square, of the same height, and evenly lined, without sloping one way or the other. What is called a fount, or font of letters, is a quantity of each kind, such as capitals, small capitals, italics, the running letters, &c. A complete fount includes, besides these, all the single letters, double letters, points, lines, characters for reference, and figures. A fount does not contain an equal number of the different letters, because some letters much more frequently occur than others. In a fount containing a hundred thousand characters, there should be five thousand of *a*, three thousand of *b*, eleven thousand of *e*, six thousand of *i*, and of the other letters in proportion.

Various patents have been obtained for improvement in printing types, during the last century, which we cannot enumerate. The greatest improvement is, unquestionably, that of *stereotype*. See PRINTING. The metal with which stereotype plates are made is a compound of regulus of antimony and hard lead, or tea-chest lead. The general method of mixing the metal is to take one hundred weight of regulus of antimony, and break it into small pieces, and then add to it from five to eight hundred weight of hard lead. The lead is melted over a slow fire, and when melted, the scum is to be taken off, and the regulus of antimony put in. To every hundred weight of lead may be added a pound or two of block-tin; but this is supposed by many persons not necessary.

TYPHUS, a fever, generally characterised by debility, a tendency in the fluids to putrefaction, and often, in its severe forms, contagious.

Perhaps there is no complaint to which the human frame is liable, not even the gout excepted, which has given rise to greater differences of opinion and of practice amongst the faculty, than the various species of diseases which have been sometimes arranged under the generic term *typhus*. This has arisen not only from the different views which physicians have taken of typhous diseases, but also from the predominance of some symptom by which the disease has been sometimes, and in some countries, peculiarly distinguished. Thus the typhus of warm climates has been called, from the yellow colour of the skin with which it is often attended, the *yellow fever*; there is also the *purple*, or *spotted fever*; the *miliary fever*; the *thrush fever*; the *slow*, or *nervous fever*; the *putrid*, *pestilential*, or *malignant fever*: the *camp fever*; the *jail fever*; the *bilious remittent fever*; the *plague*; the *confluent small-pox*, &c. We have treated of some of these under separate heads. See MILIARY FEVER, PLAGUE, SMALL POX, THRUSH, and YELLOW FEVER. As all these complaints are attended with more or less danger, and as some of them are also occasionally highly contagious, the best medical advice should at once be obtained. But as attention to diet and regimen, in typhous diseases, is of essential importance, we will endeavour to lay down a few plain directions, which, in addition to what we have said under CONTAGION, (to which the reader will please to refer), will, we hope, contribute to the ease, comfort, and convalescence of those who may happen to labour under complaints of this nature.

The term *typhus* is now, unfortunately for the public, and the public health, too often interpreted in its worst sense: for no sooner is a person said to be labouring under it, or, which is the same thing, under *typhous fever*, than all our fears take the alarm, and we too frequently assume that plague, pestilence, contagion, and death are abroad. But, although there can be no reasonable doubt that the plague, the small-pox, and some severe forms of what is commonly denominated *putrid fever*, are contagious, yet it is nevertheless true, that many diseases denominated typhus, such as the miliary fever, the slow nervous fever, and others, are not contagious. And even in contagious typhus, where ventilation and cleanliness are carefully attended to, contagion, unless within a very few feet of the patient, is rarely, if ever, propagated.

It has been said that the most general cause which gives rise to typhus in its severe form is contagion, applied either immediately from the body of a person labouring under, it, or conveyed in clothes or merchandize, &c. This, however, although sometimes the cause, is not, in our opinion, the most common cause. It may be, and often is, produced by the effluvia arising from either animal or vegetable substances, in a decayed or putrid state; and hence it is, that in low and marshy countries it is apt to be prevalent when intense and sultry heat quickly succeeds any great inundations. A want of proper cleanliness, and confined air, are likewise common, and, we believe, some of the most common causes, in this country at least, of this fever; hence it often prevails in the alleys and lanes of this crowded metropolis, in the close and crowded dwellings of the poor; and also in hospitals, gaols, camps, and on board ships, especially when such places are much crowded, and the strictest attention is not paid to a free ventilation, and due cleanliness. It appears too, that a want of attention to these essentials of *pure air*, and *cleanliness*, is more particularly productive of the disorder, in a room where many persons *sleep*. We have seen a fever of this kind produced, where there was no want of cleanliness generally, from the circumstance of *six* persons sleeping, during the summer, in a room in which was no fire place. A close state of the atmosphere, with damp weather, is likewise apt to give rise to putrid fever. To which may be added, as causes of this complaint, famine, deficiency of or poorness of food, long fasting, hard labour, and continued want of sleep: in a word, whatever tends to exhaust the energies of the system. Hence persons of lax fibres, who are weakened by any previous debilitating cause, are most liable to it; and hence its frequency amongst the lower classes of society.

We cannot describe the numerous and anomalous symptoms which attend the various grades of typhous fever. But in its more severe form the patient is generally seized with languor, dejection of spirits, amazing depression, and loss of strength, universal weariness and soreness, pains in the head, back, and extremities, and rigors; the eyes appear full, heavy, yellowish, and often a little inflamed; the temporal arteries throb violently; the tongue is dry and parched; respiration is commonly laborious, and interrupted with deep sighing; the breath is hot and offensive; the urine is crude and pale; the body is costive, and the pulse is usually quick, small, and hard, and now and then fluttering and unequal. Sometimes a great heat, load, and pain, are felt at the stomach, and a vomiting of bilious matter ensues. As the disease advances the pulse increases in frequency, being often from 100 to 130 in a minute; there is vast apparent debility, a great heat and dryness in the skin, oppression at the breast, with anxiety, sighing, and moaning; the thirst is greatly increased; the tongue, mouth, lips, and teeth are covered over with a brown or black tenacious fur; the speech is inarticulate, the patient mutters much, and delirium ensues. The fever continuing to increase, the symptoms become still more violent; the breath becomes highly offensive; the urine deposits a black and fetid sediment; the stools are dark and offensive, and pass off insensibly; hæmorrhages issue from the gums, nostrils, mouth, and other parts of the body; livid spots appear on its surface; the pulse intermits and sinks; the extremities grow cold; hiccups ensue, and death closes the scene. This is the course of the disorder in its severest form; but in this country it is by no means, in general, so formidable, although it is, nevertheless, occasionally fatal.

When this fever does not terminate fatally, it generally begins, in cold climates, to diminish about the commencement of the third week from its first attack, and goes off gradually towards the end of the fourth without any evident crisis; but in warm climates it seldom continues above a week or ten days, if so long.

Our opinion of the event in this fever, must be formed by the degree of violence in the symptoms, particularly after the appearance of livid or purple spots on the skin, although, in some instances, recoveries have taken place under the most unpromising appearance. An abatement of the heat and thirst, a gentle moisture equally diffused over the whole surface of the body, loose stools, turbid urine, and the absence of delirium and stupor, may be regarded as favourable. But livid or purple spots on the skin; dark, offensive, and involuntary discharges, fœtid sweats, hæmorrhages and hiccups, denote almost certain dissolution.

Upon the subject of the treatment of this fever, it is to be lamented that physicians should have so greatly differed. Till lately the directions were, withhold the lancet as you value the life of your patient; but Dr. Bateman informs us, in his *treatise on contagious fever*, that if blood letting be employed early it is an active remedy, and abridges the course of the complaint.

But how doubtful soever blood-letting may be in the severe forms of typhous fever, and we confess that we do entertain strong doubts both of its propriety and utility, we perfectly agree with Dr. Bateman, that a *prompt evacuation of the stomach and bowels should be, under all circumstances, the first expedient.* A scruple of ipecacuanha is the best emetic; after which, five grains of calomel, with six or eight of jalap, should be given to empty the bowels. These medicines will, sometimes, almost at once cut short the disease. But a purgative alone has not been found to answer the purpose so well.

At all periods of the disease, but more signally within the first week, whenever the skin is dry and hotter than natural, the face, arms, and body may be sponged with cold water, with or without the addition of a little vinegar, with considerable advantage. It speedily reduces the temperature of the body, relieves thirst, and is extremely grateful to the sensations of the patient, and is often followed by a quiet slumber and perspiration. Should the heat of the skin afterwards return, the operation may be repeated: the general rule for which should be *when the skin is hot and dry.*

Should not the disease be subdued by these means, we must still continue our attention to the state of the stomach and bowels. Weak and acidulated drinks may be given; but it will not often happen that any solid food will either be desired or retained; and perhaps the less food is taken the better. The bowels should, however, be evacuted daily, or on every alternate day, by means of calomel, with a little jalap, or rhubarb, or the sulphate of magnesia; but in all cases it is desirable to clear the alvine canal effectually by the addition of three, four, or five grains of calomel.

For some time after the commencement of the disorder, no stimulants whatever should be given. Dr. Bateman informs us that they aggravate the symptoms

The same cooling system must be pursued in all that relates to the domestic management of the patient; to the state of his apartment and bed, and to the kind and quantity of his drink and nutriment. It is very important to maintain the purity and coolness of the atmosphere in the patient's room. A free ventilation is not only requisite to prevent the accumulation of infection, but contributes, in fact, to support the powers of life and lessen the febrile depression. The popular terror of *catching cold*, and the habitual closeness of beds and beds-rooms, too common in this country, cannot be too often combated. In warm or temperate weather, one or more windows should be kept constantly open during the day, and occasionally in the night, to refresh the atmosphere of the room, guarding the patient, of course, from strong or partial currents of air. In cold weather the door of the room should be kept open, and a window partially opened from time to time. The temperature of the room being equalized by means of a small fire, which, also, contributes to the more thorough ventilation of the chamber, which is the object of the free admission of air; coolness, and not actual coldness, being the most desirable in such an apartment.

The same end is also materially promoted by having no curtains round the bed, and also by the lightness of its coverings; the bed-clothes should be as few as possible, consistent with the feelings of the patient, which are commonly the best guide in regulating this matter.

The introduction of camphor, aromatic vinegar, or other fragrant substances, or odorous fumigations into the patient's room, is improper. They have not the smallest influence in destroying contagious or offensive effluvia; they only render us less sensible to their presence, whereas, under a free ventilation, all offensive exhalations are dissipated, and that most grateful condition of the atmosphere of a sick room is produced in which no odour whatever is perceptible in entering it.

The drink of the patient should be cold in summer, and cool in the winter; in the former season ice or iced fluids are commonly very palatable. Water from the spring is an agreeable beverage at most seasons, and may in general be freely permitted; it is perhaps the best ordinary drink in fever; but it is often rendered more agreeable by a moderate acidulation with the juice of lemons or other fruits, or with cream of tartar. Rennet whey is often a grateful beverage, and is likewise nutricious. The whole nourishment indeed, during the progress of the fever, is almost necessarily limited to liquids, and those chiefly of a vegetable nature, as the stomach neither demands nor bears any thing more substantial. The vegetable mucilages and starches, such as gruel, barley-water, preparations of sago, arrow root and rice with milk, strawberries, and the sub-acid fruits, should constitute the whole apparatus of diet, excluding even the animal broths and jellies, till some indication of the approach of convalescence appears.

In delirium, whether of the more outrageous kind, or accompanied with stupor, Dr. Bateman strongly advises the immediate abstraction of six or eight ounces of blood from the arm; or the application of cloths wetted with cold evaporating fluids to the shaven scalp; the cloths should be dipped in cold water, to which a little ether may be added to increase the evaporation, and these renewed as they become heated. A blister applied to the back part of the neck, close up to the occiput, has also been of decided efficacy. In slighter degrees of delirium, a blister on the nape of the neck, purgatives being at the same time employed, has completely removed it.

Relative to wine, Dr. Bateman informs us, that whilst *the tongue remains parched, the skin dry, and the pulse above 120, with the slightest perceptible sharpness in its beat*, the use of it is always injurious and inadmissible.

There is one condition of this fever, however, in which wine and similar stimulants are essentially necessary to the recovery of the patient, and in which they should be used with a liberal, though cautious hand. This state is called by some of the faculty, a state of collapse; which occurs in this complaint principally, but not exclusively, in patients past the meridian of life, and the symptoms of which may be, without much difficulty, distinguished. The increase of languor and actual debility is very manifest, and is much complained of by the patients, the sense of faintness and sinking, and the oppressive labour in breathing, being extremely distressing.

The skin becomes cool or cold, and generally damp; the tongue, though previously brown and dry, becomes moist, yet remains loaded; and the pulse generally increases in frequency, but is so feeble as to give rather the impression of an undulation than of a stroke. In such states stimulants are required. Brandy, in moderate doses, may be given; but about a pint of wine, given in divided doses, in the course of twenty-four hours, has been commonly sufficient.

Wine may be also advantageously employed, although more sparingly, under a state of great languor, with picking of the bed-clothes, and starting of the tendons, and some confusion of thought, *provided* the tongue be not parched, the skin be soft and moist, and the pulse open and fluent, in conjunction with local evacuations. It may be also advantageously given in the state of torpor which accompanies the livid blotches on the skin, when in union with free purgation; and in the state of diarrhœa unaccompanied by tenesmus, or much disturbance in the head.

When the patient is convalescent, it does not appear that medicines are in general necessary. The returning power in the digestive organs is in danger of being impeded, rather than promoted, by tonic medicines, more especially the Peruvian bark. An occasional laxative may be, however, necessary; or the saline draught may be taken; or diluted sulphuric acid in the infusion of roses. In lingering debility, occasioned by gangrenous ulcerations, sloughing sores, or slow suppurations, the Peruvian bark is a valuable remedy.

Relative to *fumigation* in this complaint, we do not think that it is in general necessary; when, however, it should be thought so, the best method of fumigation, as indeed of preventing or avoiding contagion, in addition to what we have said above, and also under our article PLAGUE, is described under CONTAGION, which see.

TYRIAN PURPLE, a durable dye, long known to the learned world, and obtained from a species of shell fish, by some supposed a *murex*, see PURPLE FISH; by others a *buccinum*, see WHELK.

U.

UDDER, the breast of a cow, and many other animals in which the milk is secreted.

For *swelled udders* in cows, see COW.

ULCER, a purulent or ichorous sore or wound, generally affecting the soft parts of the body. When occurring in the bones, it is termed carious ulcer, or caries.

Ulcers arise from various causes, and are of various kinds; the chief are, the *callous* ulcer, the *sinuous* ulcer, and the *ulcer with caries of the adjacent bone*; besides this, there is the putrid ulcer, the corrosive, the variose ulcer, &c.

In the cure of ulcers, external applications will be often useless, unless assisted by internal remedies: for many ulcers are the effect of some indisposition of the body, and it is difficult, when this is the case, without removing such indisposition, to cure them at all. Cancerous and scrofulous ulcers are the most difficult of cure. Ulcers of *many years* standing are also very difficult of cure; and in old persons it is never advisable to attempt it; for if they should be healed up, the probability is, that the cessation of a long and customary discharge may produce an asthma, diarrhœa, fever, or some other complaint which may prove fatal. In such cases, the only thing which should be done is, to endeavour to keep the ulcer in the most healthy condition, by suitable digestives; one of the best, for almost all kinds of ulcers, is the yellow basilicon, and red precipitate, as mentioned under **Basilicon**; or tar ointment, with calomel, as mentioned under **Tar**. It will not often happen that most ulcers cannot be brought into a more healthy state by one or other of these applications; and in the young and middle-aged they will be often, by such means, effectually healed, and which they may, in general, be with perfect safety. In the healing of all ulcers, however, which have continued to discharge for some time, precaution should be taken to keep the bowels somewhat relaxed during the process, and also for some time afterwards. In all cases of stubborn ulcers, the bark very copiously given will be found of the utmost service; and when the discharge evidently weakens and wastes the body, what is said under appetite, aliment, and dyspepsia, will require the greatest attention. In some cases of this kind, good home-brewed ale, not stale, taken in moderate quantities, will often be of service, provided it does not produce inconvenience by flatulence, or other unpleasant symptoms.

If an ulcer produce *spongy*, usually called *proud* flesh, it should be destroyed by some escharotic or pressure. The best caustic, if the basilicon and red precipitate be not sufficient, is the nitrate of silver; (see **Silver**,) with which the fungous flesh should be occasionally touched till it is removed.

The healing of ulcers of the lower extremities may be promoted by bandages, more especially if the limb be swelled. The bandage should not be partial: it is in general most advisable to bind up the whole limb from below the wound, and to some distance above it: for these bandages strips of calico, about three inches wide, are perhaps the best; nor is it of trifling consideration that clean dressings and bandages be renewed *daily*.

In all ulcers arising from caries of the bones, it will be vain to expect a cure till the rotten part of the bone is removed; and every attempt with escharotics will be useless pain to the patient.

In the cure of ulcers of the legs, rest, and a horizontal position, will often assist nature, and should, if possible, be complied with; although, if the leg be bandaged, and the patient can take and bear a moderate portion of exercise, especially in the open air, this may be even better than any horizontal position whatever. But in this, as indeed in the cure of almost every other disease, the feelings of the patient must be taken into the account.

A method of treating ulcers of the legs, adopted some time since by Mr. **Baynton**, an ingenious surgeon of Bristol, has now very generally come into use. It consists in carefully drawing the skin which surrounds the ulcer towards its centre; and which is gradually effected at each dressing by the aid of slips of adhesive plaster, spread on smooth calico. These slips must be made 2 inches broad, and of such a length that, after passing round the limb, 4 or 5 inches remain. The middle of this piece is to be applied to the sound side of the limb, opposite to the inferior part of the ulcer, about one inch below the edge of the sore, and the ends are drawn over the ulcer with as much gradual extension as the patient can bear. Other strips are then to be placed in a similar manner, each above and in contact with the other, until the whole surface of the sore and limb be completely covered, at least one inch below, and two or three inches above, the diseased part. Next the limb is to be defended by rollers of soft calico, passed round as smoothly as possible, above and below the ulcer. The plaster to be used for this purpose is the *resin plaster* described under **Plaster**. It is, however, sold in London ready spread.

In cases of violent inflammation, and considerable discharge, Mr. B. recommends repeated affusions of cold water; the patient should take frequent exercise; and the bandages should be applied early in the morning, as the limb is then less liable to swelling.

ULCERS, in HORSES, are of various kinds. The *simple* ulcer, which arises from a superficial wound or bruise, will generally heal spontaneously, or by the application of some mild astringent, such as solution of alum, or tincture of myrrh; but if it be foul, or callous in any part, an escharotic application will be proper, such as burnt alum, or red precipitate, or green basilicon. In a *sinuous* ulcer, the sinuses, or hollow part, should be completely laid open with a knife. The first dressing should be with the escharotic powder, or solution of blue vitriol, afterwards with some mild astringent. The *fistulous* ulcer must be laid open as far as is practicable. See FISTULA and POLL EVIL. In the *fungous* ulcer, the spongy flesh is to be removed with a knife, and the sore dressed with escharotic powder till it become a simple ulcer. In the *carious* ulcer it is necessary to expose the foul bone, or cartilage, so that it may be scraped with a drawing knife, or any other more convenient instrument; it is then to be dressed with the tincture of myrrh, or astringents. The *glanderous* ulcer, when it occurs within the nostrils, is generally incurable; although when small, and so low down as to admit the application of mild caustics, it sometimes heals, yet fresh ulcers usually break out in other parts of the nose. When it occurs on the skin, as in farcy, it may be generally healed by mild caustics; but here also the constitution is often tainted, and the supposed cure is followed by glanders. See FARCY and GLANDERS.

In the treatment of simple ulcers it has been too much the practice to dress solely with ointments; and also to cover them with plasters and bandages; but in many cases they heal more readily when exposed to the air.

Ulmin. See EXTRACTIVE MATTER.

ULNA, CUBIT, in anatomy, the larger bone of the fore arm, the smaller being named *radius*; it is smaller and shorter than the os humeri, and becomes gradually smaller as it descends to the wrist. The chief process of this bone is called *olecranon*, or the elbow. See ANATOMY.

ULTRAMARINE, an exquisitely beautiful, pure, and permanent pigment, of a deep sky blue, capable of sustaining a low red heat without injury, and not sensibly impaired by the action of air or weather It is contained in Lapis lazuli, and appears to be little else than oxide of iron. It is separated from the mineral with great difficulty and delicacy, and hence obtains a very high price.

UMBEL, in botany, a receptacle stretching out into filiform proportioned peduncles, from the same centre. It is simple, or undivided, as in panax or Ginseng;—compound;—and proliferous, or super decompound. An umbel is also concave, convex, and fastigate; and either erect or nodding. Flowers growing in this manner are called umbelled, or umbelliferous; that is, where many of them grow together in umbels.

UMBER, an argillaceous earth, with a mixture of iron, of a dull brownish colour, used chiefly in oil colour painting. An inferior kind of peaty umber is obtained in the neighbourhood of Cologne, where it is used as an article of fuel; it is said to be also used for the adulteration of snuff. *Turkey umber* is the best for painters; but an inferior kind, called English umber, is also occasionally used.

Umber, or *Grayling*. See SALMON.

UMBRE, or *Scopus*, a genus of birds consisting of one species only, the *umbretta*, or Tufted umbre, having a long, thick, compressed, and somewhat hooked bill; with a crest lax, thick, tufted; body brown; tail obscurely barred; legs longish, brown; toes connected at the base; female not crested; twenty inches long; inhabits Africa.

Umbrella-tree. See MAGNOLIA.

Umpire. See ARBITRATION and AWARD.

Understanding. See MIND and REASON.

Unguentum. See OINTMENT.

Unicorn fish. See NARWHAL.

UPAS, or *Toxicaria Macassariensis,* an Indian poison, obtained from a tree hitherto undescribed by any medical botanist; but it is known by the name of boas upas. The Dutch inhabitants call it giftboom, or spatenboom. It is called by RUMPHIUS *arbor toxicaria*; and among the Malay inhabitants of Malacca, Java, and Sumatra, it has the names of ipo, cajo-upas, boa-upas, and lupo matta ju. 'Two species of it are mentioned by Rumphius, a male and female; but the flowers and fruit are unknown. The tree is said to have a thick trunk, spreading branches, and ash-coloured bark; the wood is solid, of a yellowish white colour, variegated with black spots. It grows in several of the warmer parts of India, chiefly in the islands of Java, Sumatra, Borneo, Bali, Macassar, or Celebes. It is found, for the most part, in very desert places, and on bare mountains. It is said also that it is easily distinguished at a distance, as no other tree will grow near it; and that the ground on which it stands is barren and parched up.

The juice of this tree, in which the whole deleterious power resides, is of a dark brown colour, and, being dried, appears like a resin. That obtained from the male tree is said to be the hardest and best, resembling pitch. Those who collect the juice are obliged to be extremely cautious, that they may not be endangered: it is collected from the tree by thrusting canes, pointed like a spear, obliquely into the bark of the trunk: the juice gradually drops into the hollow of the cane, when it becomes of the colour and consistence above mentioned. '

The Indians employ this poison to punish criminals, and likewise to rub on the weapons which they use. When any person is wounded with a dart, upon which this poison has been rubbed, it very quickly diffuses itself through every part, exciting a violent sense of heat and vertigo, to which death soon succeeds; for the most part in the space of half an hour, sometimes in a less period

Not only is the juice of this tree a virulent poison, but it is said that from the effluvia which it emits, the limbs are affected with spasm; and that if any one stand under it with his head bare, a loss of hair is the consequence; and that if a drop falls on any part, excessive swelling arises. It is also said that birds sitting on its branches, in a short time fall down dead; and that they can with difficulty fly over it. Such stories are, however, most probably exaggerations. Indeed, much more extraordinary stories of this tree, and of its poison, were very generally circulated throughout Europe upwards of thirty years ago; but they are now known to be fabulous.

For the cure of persons poisoned by the upas, see NUX VOMICA, and also POISONS.

Notwithstanding the deleterious nature of this juice; it is said to be used both internally and externally as an antidote for other poisons; but, in truth, little which can be depended upon is known about it.

Uranite. See URANIUM.

URANIUM, a metal of a grey colour, brittle and very difficult of fusion. Its specific gravity is about 9.

The native oxide of uranium is called *uranite,* the crystalline form of which is the cube and several modifications; it often occurs in thin quadrangular plates; it exhibits various shades of yellow and green. It has been found in France; and of great beauty near Callington, in Cornwall. The native sulphuret of uranium was formerly called *pechblende;* from this ore uranium may be obtained thus: Reduce it to powder, and expose it to the heat of a muffle; then digest in dilute nitro-muriatic acid, and precipitate by excess of ammonia; collect and wash the precipitate, and dry it at a heat approaching redness. When exposed to a violent heat, with a small quantity of charcoal powder, metallic uranium is obtained. The salts of uranium have a yellow colour, and an astringent metallic taste: but very few experiments have been hitherto made upon this metal: it combines with vitrifiable substances, and gives them a brown or a green colour. On porcelain, with the usual flux, it produces an orange.

Urchin. See SEA-HEDGEHOG.

UREA, the principle which confers upon urine its chief peculiarities. It may be obtained by slowly evaporating urine to the consistency of syrup, which, on cooling, concretes into a saline mass, and which, by digestion in alcohol, furnishes urea. By carefully distilling off the alcohol, the urea remains in the form of a brown crystallized mass. Urea is very soluble in water, and the solution is resolved, by putrefaction, into acetic acid and ammonia. The fixed alcalies decompose urea, and occasion the evolution of ammonia and some other products. See URINE.

UREDO, in botany, a genus of fungi, of which nine species have been enumerated, all indigenous to our own country. They are all distinguished by being parasitical, consisting of mealy powder, under the cuticle of plants; sometimes under the cuticle of leaves or stem; and sometimes under that of the parts of fructification. The *frumenti*, is linear oblong, black-brown, and well known as to its effects by the name of *blight*. The *segetum* is black in the spikelets of grasses: equally known as to its effects by the name of *smut*. See MOULD, RUST, and SMUT.

URETER, in anatomy, a membranous canal, which conveys the urine from the kidney to the urinary bladder. It is about the size of a goose quill, and about a foot long. It arises in the hollow sides of the kidney, and ends in the bladder near its neck. There is, of course, one ureter to each kidney. See BLADDER.

Urethra. See GONORRHÆA.

URIC ACID, one of the peculiar characteristics of the urine.

The presence of uric acid may be shown by evaporating urine to half its bulk, which produces a precipitate consisting of phosphate of lime and uric acid; the former may be dissolved by dilute muriatic acid, which leaves the latter in the form of a reddish powder.

Uric acid constitutes the principal ingredient in certain urinary calculi, and may be abundantly obtained by digesting them in caustic potash, filtering the solution, and adding excess of muriatic acid, which causes a precipitate of uric acid; which, thus obtained, is a grey powder, of scarcely any taste, and requiring 1720 parts of water at 60°; and 1150 parts at 212° for its solution. It reddens infusion of litmus, and readily dissolves in caustic potash and soda. It dissolves also in nitric acid, and, upon evaporation, a residuum of a fine red tint is obtained, which is peculiar to this combination, which possesses distinct acid properties, and which, in consequence of the purple or red colour of its compounds, has been called *purpuric acid.* See GRAVEL and URINE.

URINE, that saline liquid secreted in the kidneys, and dropping down from them through the ureters into the cavity of the urinary bladder.

The urine of a healthy person is divided, in general, into *crude*, or that which is emitted one or two hours after eating; which is for the most part aqueous, and often vitiated with some kind of food: and *cocted*, or that which is discharged some hours after the digestion of the food. This is generally in smaller quantity, thicker, more coloured, and more acrid than at any other time.

The *degree of heat* of the urine agrees with that of the blood. The *specific gravity* is greater than water; that emitted in the morning being the heaviest. The *smell* of fresh urine is not disagreeable. The *taste* is saltish and nauseous. The *consistence* is somewhat thicker than water. The quantity depends upon that of the liquid drink, its diuretic nature, and the temperature of the air. No fluid in the human body is, however, so variable in respect to quantity and quality as the urine.

The urine is an excrementitious fluid, by which the body is not only liberated from the superfluous water, but also from superfluous salts and earthy matter; and is also defended from corruption.

From what has been said under the articles *urea, uric acid,* and *gravel,* the chief constituents of urine may be inferred; the following is Berzelius's statement of the average composition of human urine:

Water	933,00
Urea	30,10
Sulphate of potassa	3,71
Sulphate of soda	3,16
Phosphate of soda	2,94
Muriate of soda	4,45
Phosphate of ammonia	1,65
Muriate of ammonia	1,50
Free lactic acid Lactate of ammonia Animal matter soluble in alcohol Urea not separable from the preceding	17,14
Earthy phosphates with a trace of fluate of lime	1,00
Uric acid	1,00
Mucus of the bladder	0,32
Silica	0,03
	1000,00

The urine undergoes considerable alteration in consequence of our taking some species of food and drink, and also medicines. It also suffers some very remarkable changes in certain diseases In injuries of the spine, affecting the nerves which supply the kidneys, it is always turbid and often alkaline; and there is a considerable tendency in such cases to form calculi. In diabetes, (See DIABETES,) it is not only secreted in excess, but contains a substance having the taste and properties of sugar; and its specific gravity is also, in such a state, considerably augmented.

Many of the complaints and obstructions of the urinary passages arise from calculous concretions, concerning which, we have treated under GRAVEL and STONE. But as they sometimes arise from other causes, and are almost always attended with more or less danger, it will be expedient to notice them here.

When the inclination to make water is succeeded by a discharge of a few drops only, it is termed *Strangury;* if the difficulty of voiding it be attended with pain, *Dysury;* and a total suppression of urine is called *Ischury.*

These complaints may be produced by an acrid state of the blood; by spasms; compression of the neighbouring parts; scirrhous or cancerous tumours, forming internally; suppressed perspiration; repulsion of rheumatism, gout, and cutaneous eruptions; stone in the bladder or kidneys; inflammation of the bladder; strictures in the urethra; acrid food or medicines will sometimes produce strangury: we have known large quantities of the root of horse-radish, eaten as food, produce most unpleasant symptoms of this nature.

In the more severe forms of all these complaints, a physician ought by all means to be consulted.

In a total suppression of urine, perhaps one of the most effectual remedies is the warm bath; and in some cases of stricture of the urethra, as well as in some calculous cases, the introduction of a catheter will be necessary. In every stage of these painful maladies, the patient should take lukewarm mucilaginous liquids; such as solutions of gum arabic or tragacanth in water; or linseed tea, barley water, &c. If the urine be not totally suppressed, a mixture of equal parts of tincture of opium and spirit of nitrous ether, taken to the amount of thirty or forty drops, or more, three or four times a day, in gruel or other emollient liquid, may be of service. Warm fomentations may be applied to the lower part of the belly, and emollient clysters may be administered. See BLADDER.

Relative to *incontinence of urine,* it may be important to remark, that children as well as other persons are more liable to discharge their urine when sleeping on their backs than in any other posture; that it often happens when a child wets the bed, he is lying on his back; the remedy is, to accustom it to sleep on its side, or in any other position than its back, and, most probably, the habit will be broken. The same method should be adopted with adults. The urine pressing on an extremely sensible part of the bladder, when we lie on the back, is the cause of this occurrence; whereas, in another position, and particularly when lying prone, the pressure is removed. See INCONTINENCE OF URINE.

URSUS, or BEAR; under this head are also included the BEAR, BADGER, RACOON, &c. A genus of quadrupeds comprehending ten species, distinguished by fore-teeth, upper six hollowed within, alternate; lower six lateral, two longer lobed; secondary at the base interior; tusks solitary; grinders from five to six; tongue smooth; eyes with a nictitant membrane; snout prominent. They have five toes on each foot, all contiguous; sole of the foot long, resting on the heel; they climb; and some use the fore feet like hands. They are as follow:

The *Arctos*, or Black bear; five varieties; quite black,—brown, or ferruginous,—black mixed with white hairs,—variegated,—white. This species has a long head, small eyes, and short ears, rounded at the top; limbs strong, thick, clumsy: feet large; tail very short; body covered with very long shaggy hair. The largest bears of this species are the rusty brown; the smallest the deep black. They inhabit the northern parts of Europe, Asia, and Arabia, the Alps of Switzerland and Dauphinè; Japan, Ceylon, North America, and Peru. They are not confined to one climate, but bear almost any, except the burning sands of Africa. The brown bears are sometimes carnivorous, and will destroy cattle and eat carrion; but their general food is roots, fruits, and vegetables; they wash their feet and lick their paws; gravid one hundred and twelve days; bring forth one at a time; they become torpid from the middle of November till the frost breaks; fight with the fore feet, standing erect upon the hinder; never attack man unless provoked; flesh eatable; fat said to make hair grow.

The *Americanus*, or American bear, is black; throat and cheeks rusty brown; smaller than the last; found in America and Kamschatka. Multitudes are killed annually, in America, for their flesh and skins.

The *Maritimus*, White, or Polar bear, grows to a vast bulk, sometimes thirteen feet long. They are confined to the coldest parts of the globe; found chiefly on the shores of Hudson's Bay, Greenland, and Spitzbergen; and also in Siberia; they swim and dive admirably; feed on fishes; and will attack even armed men; their greatest enemy is the morse; flesh white, said to taste like mutton; their fat is melted for train oil.

The *Luscus*, Wolverene, or Wolverene bear, has the tail long, body rusty brown; snout blackish; forehead and sides yellowish brown; twenty-eight inches long; the whole body covered with long, thick, black hair, which varies in colour according to the season; inhabits Hudson's bay and Canada.

The *Gulo*, or Glutton, is tawny brown; measures about three feet and a half long; extremely voracious, whence its name; lives entirely on animal food, lurking in trees and falling on its prey; inhabits Europe, Asia, and America.

The *Lotor*, or Racoon, is of the size and figure of a small badger, and is said to partake of the qualities of the fox, the dog, and the monkey; varying in colour; easily tamed, very good natured and sportive; eats almost every thing; very destructive to poultry.

The *Meles*, or Badger; three varieties. See BADGER.

The *Labradorius*, has the back coloured like the common badger, throat, breast, and belly white; called, in Pennsylvania, the ground hog.

The *Indicus*, or Indian badger, has the back white, inclining to grey; breast, belly, and sides black; about two feet long; tail four inches; hair short and smooth; inhabits India; is lively, playful, and good natured.

The *Tetradactylus*, or Land bear, has the body yellowish white; tail long; less than the badger; almost destitute of hair; impatient of cold; burrows in the ground.

USQUEBAUGH, a spirituous liquor, chiefly taken by way of drachm.

There are various methods of making this liquor. The following are the ingredients chiefly used. Nutmegs, cassia-cinnamon, angelica root, Florentine orris root, elecampane root, hay saffron, rhubarb, of each one ounce; mace, cloves, lesser cardamom seeds, of each two drachms; liquorice root three ounces; coriander seeds, aniseeds, turmeric root, caraway seeds, of each one ounce and a half; French brandy five gallons. Let all the ingredients be first bruised, and then digested in the brandy for a fortnight. Strain and press them off as directed under Daffy's Elixir; and, if it should be desired to save all the spirit, a quart should be distilled off, as directed under that article. The distilled liquor must, of course, be added to the expressed tincture. To this may be added, at pleasure, canary, or other wine.

We give this form for usquebaugh, but cannot recommend it in any shape, or for any purpose.

Uterus. See MENSTRUATION, and PARTURITION.

Uva ursi. See STRAWBERRY TREE.

UVULA, in anatomy, the small, conical, fleshy substance, hanging in the middle of the velum pendulum palati, near the roof of the mouth; its use is chiefly to regulate the admission of air to the lungs from the nose.

The uvula is liable to ulcerations and other complaints, similar to the tonsils. Catechu, dissolved slowly in the mouth, is said to be a useful remedy for a relaxed uvula.

V.

Vaccination. See COW-POX.

VACCINIUM, or WHORTLE-BERRY, MOORBERRY, and CRANBERRY, a genus of plants comprehending twenty-seven species, chiefly natives of North America; several of Europe, a few of Japan; four common to our own country: these are, the

Myrtillus. Myrtle-berry, Whortleberry, Bilberry, Winberry, or Bleaberry; in some of the provinces the fruit is called *whorts.* The leaves are ovate, serrate, deciduous; the stem angular. It is a shrubby plant, not rising more than from one to two feet in height; the berry is bluish black, and has a sweetish sub-acid taste; stains the hands and mouth of a dark purple, or blackish colour. Makes an agreeable variety of pastry; it is sometimes mixed with raspberries and currants for such purposes. Found in woods, heaths, and elevated mountainous regions, in various parts of Great Britian; in Somersetshire, Devonshire, Monmouthshire, &c., and in Scotland; it is also in great plenty in Caen wood, near Hampstead. A variety with white berries.

The *Uliginosum,* or Great bilberry; has obovate, very entire, glabrous leaves; branches round; the berries larger, but less esteemed than the last; found on heaths, and on the summits of the Highland mountains.

The *Vitis idæa,* or Red whortle berry, has the racemes terminal nodding; leaves obovate, revolute, denticulate, dotted underneath; found on heaths; the berries, which are dark purple, are sub-acid and cooling; in Sweden they are often made into jelly. By the old naturalists this was ranked as an arbutus.

The *Oxycoccus,* Cranberry, Moorberry, or Bog-berry, has ovate, very entire, revolute, acute leaves; stems creeping, filiform, glabrous; found in moors and peat bogs; berries red, about the size of hawthorn berries; they are acid, and are used occasionally in pastry. They were formerly in the materia medica, but are of no importance.

Vacuum. See PUMP.

Vagrants. See ALMS, CHARITY, &c.

VALERIAN, or *Valeriana*, a genus of plants comprehending thirty-one species, all natives of Europe except the *villosa*, which is a native of Japan. They are thus sub-divided,—with a single pappous seed, forming the tribe of valerian, properly so called,—fruit three-celled, crowned. The following are cultivated: The *rubra*, or Common broad-leaved red;—the *angustifolia*, or Narrow-leaved;—the *phu*, Major, or Garden;—the *calcitrapa*, or Cut-leaved;—the *tripteris*, or Three-leaved; —the *montana*, or Mountain;—the *celtica*;—the *tuberosa*, or Tuberous-rooted;—the *pyrenaica*, or Pyrenean valerian;—and the *locusta*, Common corn-salad, or Lamb's lettuce. See CORN SALAD.

The *Officinalis*, Official, or Great wild valerian, is an indigenous perennial, flowering in June. Two varieties, one growing in woods and marshy ground; the other on high pastures and heaths; the sensible qualities of the second are considerably greater than those of the first. The stems, which are round, grooved, hollow, and terminated with flowering branches, disposed cross-wise, rise three or four feet in height; the leaves are opposite, connate, and bearded at the base below; pinnate, with a terminal leaflet, a little larger than the rest; the leaflets are dark green above, beneath paler; flowers odorous, small, in corymbs, white with a shade of pink.

The roots of this plant have been long used medicinally. They should be dug up in autumn, when the leaves decay, or in the spring, before they expand, and be dried and preserved in a dry place. Those which grow wild on a calcareous soil, are preferable to those which are cultivated. Cats are allured and delighted with their odour, which, when they are dried, is strong, peculiar, and unpleasant; they have a warm, bitter, sub-acrid taste. The virtues of valerian root appear to depend on an essential volatile oil, which indicates the presence of much camphor. It is antispasmodic, tonic, and emmenagogue, and has been advantageously employed in hysteria, hypochondriasis, epilepsy, &c. It may be given in substance, combined with a small portion of mace or cinnamon; or in the forms of infusion or tincture. The dose of the powdered root may be from one scruple to one drachm, three or four times a day. An *infusion* may be made by pouring seven fluidounces of boiling water upon two drachms of the root coarsely powdered, digesting for an hour, and, when the liquor is cold, straining. The dose is from one fluidounce to two fluidounces twice or thrice a day. It should not be given with solutions of sulphate of iron, nor with infusions of yellow bark, as these are decomposed by it.

Ammoniated Tincture of Valerian, commonly called Volatile tincture of Valerian, is made thus: Take of Valerian root, bruised, four ounces; of aromatic spirit of ammonia two pints. Macerate for fourteen days, and filter. It should be kept in a ground stopper bottle.

This is advantageously given in hysteria, and other nervous affections. The dose is from half a fluidrachm to two fluidrachms, in milk, or some other bland fluid.

VALERIAN, the GREEK, JACOB'S LADDER, or *Polemonium*, a genus of plants consisting of five species, one a native of our own mountains, the rest of the Cape, or of America. The two following are cultivated: the *cœruleum*, Common polemonium, or Greek valerian, with pinnate leaves, and erect flowers; corol blue; found wild on our mountains; a variety with woolly calyxes. The *reptans*, or Creeping polemonium, has also pinnate leaves, flowers light blue, terminal, nodding; a native of Virginia. Both may be increased by seeds, or parting the roots.

Vampyre. See BAT.

VANELLOES, or VANILLOES, the dried pods of the *Epidendrum vanilla*, a species of the genus EPIDENDRUM, of which a hundred and twenty-two have been enumerated, natives of the East and West Indies. The following are the chief: The *vanilla*, the first mentioned species, a West Indian plant, with ovate, oblong leaves, and spiral tendrils. It is a parasitic plant; its leaves resemble the leaves of the vine. In our own country it requires a stove; and in America it must be reared in the immediate vicinity of some tree, in order that its branches may attach themselves to it. The dried pods are sold under the name of vanellos, or vanilloes. They are usually gathered between September and December, and gradually dried in the shade. It is said that from these pods chocolate derives its elegant perfume. The *flos aëris* has a columnar stem, and lanceolate leaves; a native of Java and India. It is said that this parasitic plant will grow for years, suspended to ceilings, and blossom annually, perfuming the air with its exquisite aroma, without the roots being in the earth. The *sinense*, or Chinese epidendrum, has ensiform leaves, and nodding flowers; it does not require so much heat as the West Indian species, thriving in the conservatory.

Vapour. See BATH and STEAM.

Vari. See MACAUCO.

Variation of the needle. See COMPASS

VARIETY, in botany, a plant of the same species changed from some accidental cause. The usual causes of the varieties in plants are climate, soil, exposure, heat, cold, winds, culture, &c. Variety, of course, implies a trivial deviation in the individual of a species, from its general character.

Variola. See SMALL-POX.

VARIX, a dilatation of a vein. It is known by a soft tumour on the vein, which does not pulsate. Veins become varicose in the legs and other parts of the body, as we advance in life, without producing much inconvenience, and, in general, such should not be meddled with. In the scrotum this complaint is called *variocele*. This, and similar diseases, require the assistance of the experienced surgeon.

VARNISH, in the arts, a compound fluid, which, when spread over a solid substance, adheres to it, and, being dry, forms upon its surface a shining and sometimes transparent coat, impervious to air and moisture.

Varnishes are of various colours and qualities, derived from the ingredients of which they consist. The bases of varnish are the resins dissolved in fixed oils, in volatile oils, or in alcohol. The chief, however, are common resin, lac, copal, (see COPAL,) amber, (see AMBER,) and Indian rubber; to these may be added mastich, anime, elemi, sandarach, turpentine, gamboge, dragon's blood, asphaltum, &c. &c. These substances are capable of solution in the one or the other, and some of them in all, the three following menstrua: alcohol, volatile or essential oils, and fat, or fixed oils. Gamboge, dragon's blood, &c., are added to the varnish merely to impart colour.

The following are some of the most approved forms for varnish.

Turpentine Varnish. Take of black resin one pound and a half; of oil of turpentine two pints. Melt the resin, and after having removed it from the fire, mix in, gradually, the turpentine. If necessary, strain.

A common varnish. Take gum juniper eight ounces; Venice turpentine six ounces; rectified spirit of wine two pints. Digest in a gentle heat till the gums are dissolved.

A transparent varnish. Take of gum juniper eight ounces; of Venice turpentine four ounces; of mastich two ounces; of rectified spirit of wine two pints. Digest till the ingredients are dissolved.

A white hard varnish. Take of mastich four ounces; of gum juniper and Venice turpentine, of each three ounces; pounded glass, or very clean sand, to prevent the gums from forming an impenetrable lump, four ounces; rectified spirit of wine two pints. Digest till the gums are dissolved.

White polishing varnish. Take of mastich two ounces; of gum juniper eight ounces; of elemi one ounce; of Strasburgh turpentine four ounces: of rectified spirit of wine one quart. This is used upon metal, and polished with pummice-stone powder.

A copal varnish. Take of spirit of wine, fully saturated with camphor, four ounces; of copal, in fine powder, one ounce: dissolve and filter; to the filtered liquor add one pint of rectified spirit of wine, in which one ounce of elemi has been previously dissolved.

Another *copal varnish.* Dissolve half an ounce of camphor in one pint of rectified spirit of wine; pour the solution on four ounces of copal reduced to small pieces; heat it so that the bubbles which rise may be counted; when cold, pour it off. More spirit may be added to the residuum. For pictures.

Another *copal varnish.* Take of copal, melted and poured into water, three ounces; of gum juniper six ounces; of mastich three ounces; of Strasburgh turpentine two ounces and a half; pounded glass four ounces; rectified spirit of wine one quart. Digest till the gums, &c. are dissolved. For metals, chairs, &c.

Another *copal varnish.* Take oil of turpentine, thickened by keeping, eight ounces; of copal two ounces and a half. Apply a suitable heat.

Another *copal varnish.* Take of oil of turpentine six ounces; oil of lavender, or oil of rosemary two ounces; copal one ounce. Use a suitable degree of heat.

A soft brilliant varnish. Take of gum juniper six ounces; of elemi four ounces; of gum anime one ounce; camphor half an ounce; of rectified spirit of wine one quart. For wood works and paste-board.

A reddish varnish. Take of gum juniper eight ounces; of shell lac two ounces; of black resin four ounces; of Venice turpentine six ounces; of rectified spirit of wine one quart. This is used both upon wood and metals.

Red varnish: take of gum juniper four ounces; seed lac two ounces; of mastich and choice benzoin, of each one ounce; of Venice turpentine two ounces; of rectified spirit of wine one quart. Used for violins and cabinet work.

Furniture varnish: white wax eight ounces; oil of turpentine one pint. Melt the wax, and gradually mix in the turpentine.

Another furniture varnish: take yellow wax eight ounces; of linseed oil and oil of turpentine, of each half a pint; alkanet root two ounces. Digest the root in the oils, in a moderate heat, till they have acquired a deep red colour. Then, to the wax melted, gradually add the clear oils.

Picture varnish: take of mastich twelve ounces; Venice turpentine two ounces and a half; of camphor half a drachm; pounded glass, or clean sand, four ounces; oil of turpentine three pints and a half. Pour off the clear solution. Used for oil paintings.

Gold varnish for leather: take of turmeric root and gamboge, of each one scruple and a half; of oil of turpentine two pints; seed lac and gum juniper, of each four ounces; dragon's blood half an ounce; Venice turpentine two ounces; pounded glass, or clean sand, four ounces. Pour off the clear solution.

Transparent Japan varnish for tin-ware: take oil of turpentine eight ounces; oil of lavender six ounces; copal two ounces; camphor one drachm. Use a suitable degree of heat.

Le Blond's varnish for prints: take of balsam of capivi four pounds; copal in powder one pound. Add the copal by single ounces every day to the balsam, keeping it in a warm place, or in the sun, stirring it often. When all is dissolved, add a sufficient quantity of Chio turpentine.

A varnish for coloured Drawings: take of Canada balsam one ounce; of oil of turpentine two ounces; warm them together, so that they may mix. The drawing should be first sized with a jelly of isinglass, and when dry, apply the varnish, which will make them resemble oil paintings.

Black Japan varnish for leather: take boiled linseed oil one pint; burnt umber half a pound; asphaltum half an ounce. Boil, and add a sufficient quantity of oil of turpentine.

Varnish for grates, or Brunswick black: take of common asphaltum one pound; melt it, and add, gradually, half a pint of linseed oil, and one quart of oil of turpentine.

Varnish for plaster casts: take of white soap and white wax, of each, half an ounce, boiling water a quart.

To these varnishes we add the following forms for making *laquer*. Take seed lac, dragon's blood, annatto, and gamboge, of each, one ounce; saffron two drachms; rectified spirit of wine two pints.—Turmeric root one ounce; annatto one drachm; shell lac and gum juniper, of each, one ounce; of rectified spirit of wine one pint.—Seed lac three ounces; of amber and gamboge, of each two ounces; of a watery extract of red sanders half a drachm; dragon's blood one drachm; saffron half a drachm; rectified spirit of wine two pints and a quarter.—Turmeric six drachms; saffron fifteen grains; rectified spirit of wine one pint and a quarter. Digest for eight days and strain; then add to the strained tincture, gum juniper and elemi, of each two ounces; dragon's blood and seed lac, of each one ounce.

In the preparation of all the foregoing varnishes, the gums, &c. should be all either powdered or bruised; and, where not specifically mentioned, it will be found that a gentle, or moderate heat, and occasional stirring of the ingredients, will accelerate the process and render it more complete. As the articles are all more or less combustible, care must be taken that the heat be applied very cautiously; and that the flame of a candle, or other burning body, be not brought near to the evaporating fluids, as they will readily take fire, and much mischief may be the result.

Varnish Tree. See SUMACH.

VEAL, the flesh of a calf killed for the table. Veal is generally esteemed a delicacy; but it is very inferior to beef, and even mutton in its nutritive qualities, and its power of exciting the proper action of the human stomach. The valetudinarian and the dyspeptic should, by no means indulge in a hearty meal of this aliment. Of course, roasted veal is to be preferred to boiled. See ALIMENT and CALF.

VEGETATION, in natural history, the developement and growth of plants.

The essential organs of a full-grown vegetable or plant, consist of the root, the stem, the leaves, the flowers, and the seeds. The *root* serves to attach the plant to the soil, and is one of the organs of its nutriment; in its structure it closely resembles the stem, of which it may be regarded as a continuation, terminating in more or less minute ramifications, analogous to the branches deprived of leaves. The *stem* is usually erect, and subdivided into *branches* which bear the *leaves* and *flowers*, and upon which the seeds are ultimately produced.

When a branch of a tree is cut transversely, it exhibits a *cortical portion* or *bark; wood;* and *pith* or central medullary substance.

The bark is subdivisible into an external layer or *cuticle*, under which is a *cellular substance*, lying upon the innermost part, or *cortical layers*. The *cuticle* extends over every part of the plant; it admits of absorption and transpiration, and being generally transparent, at least upon the leaves and flowers, it admits the influence of light. The cuticle varies in appearance in different plants. On the currant and elder tree, it is smooth, and scales off; on the fruit of the peach, and on the leaf of the mullein, it is covered with wool; on the leaf of the white willow it is silky; in several plants it is covered with hair and bristles, which in the nettle are perforated and contain a venomous fluid; on the plum, and upon many leaves, it is varnished with a resinous exudation, which prevents injury from rain; it is fungous on the bark of the cork-tree; and on grasses, on the *equisetum*, or Horse-tail, and especially on different species of the rattan, it is covered with a grassy net-work of siliceous earth.

Under the cuticle is the *parenchyma;* a soft substance, appearing under the microscope of a honey-combed or hexagonal cellular structure. The *cortical layers* appear of a tubular and fibrous texture, and, with the cellular substance, receive and elaborate the sap.

The *wood* consists of an outer stratum of living wood, called the *alburnum*, *sap-wood*, or *sap;* and an inner dead part called *heart-wood*, or *heart.* In the alburnum, which is tubular, the sap appears to arise from the roots; it passes into the leaves, where it undergoes changes, and thence enters the vessels of the inner bark, in which new parts are produced, and which is thus enabled annually to generate a new layer of wood. See Sap and Timber.

When the tubular structure is examined by a magnifier, it appears composed of vessels. some of which are simple, others perforated in various ways, and others spiral. The fibres of the wood consist of concentric diverging layers, which have been called the *spurious* and the *silver grains.*

The *pith* occupies the centre of the wood; it is very variable in quantity, in plants of different ages, and appears not to be of essential importance. It probably serves as a reservoir of moisture.

The *leaves* are highly vascular, and appear composed of a woody skeleton, supporting a tubular and cellular structure. They allow of evaporation and absorption, and in them the sap is concocted and rendered fit for the production of new parts. The absorption and evaporation principally take place upon the lower surface of the leaf. In most plants the leaves are annually reproduced. In what are called evergreens, they do not fall off till the plant is furnished with fresh ones in the spring months.

The *flower* consists of the calyx, or green support of the *corolla*, or *floral leaves*, and of the *pistil* and *stamens.* The pistil is surmounted by the *style*, and is connected with a vessel containing the rudiments of the seeds. The stamens are surmounted by *anthers*, covered with a fine powder called the *pollen*, and which, being deposited upon the style, renders the seeds productive.

The *seed* is extremely various in form. It consists essentially of the *cotyledon*, the *plume*, and the *radical.* See Seed.

When a seed is placed under favourable circumstances, the different parts begin to grow; the membranes burst, the plume gradually expands and rises to the surface of the soil, and the radicle puts forth ramifications and becomes a root. These changes constitute germination. The cotyledons, originally insipid and farinaceous, become sweet and mucilaginous, and furnish materials for the early nutriment of the young plant, before its root and leaves are adequate to their full functions; vessels may be observed ramifying throughout the cotyledons for this purpose.

When the root and stem have acquired a certain degree of vigour, the cotyledons either rot away or become leaves; and the plant then derives its nourishment by the absorbing powers of the root and leaves, the former collecting materials from the soil, the latter from the atmosphere.

The circumstances requisite for the healthy germination, or growth of a seed, are principally the following:—a due temperature, which is always above the freezing point, and below 100°; moisture in due proportion; a proper access of air, the oxygen of which is slowly converted into carbonic acid. The joint operation of these agents is required: for seeds exposed to air and moisture, but kept below 32°, will not grow, though they are not injured by the low temperature; nor will a seed vegetate without air, though moisture and a sufficient temperature be present. This is shewn by burying seeds deep in the soil, and by the spontaneous vegetation upon newly turned earth, in which seeds had existed, but through absence of oxygen had been unable to vegetate. Hence, in all cases of tillage, the seeds should be sown so that the air may have access, and hence the necessity of loosening the soil by ploughing or digging, previously to committing the seeds to the earth. In sandy soils the access of air is more easily attained; but in clayey soils the adhesiveness of the materials is often the cause of their unproductiveness.

As the plant advances to perfection, it becomes dependent upon the air and soil for its nutriment: the roots absorb moisture and other materials; and the leaves, while they exhale moisture, frequently absorb carbon from the carbonic acid present in the atmosphere, and evolve oxygen. This evolution of oxygen takes place while plants are exposed to the solar rays, and appears one of the most efficient causes hitherto suggested of the purification and renovation of the air. In the *night time*, the leaves of plants always exhale carbonic acid; and, at all times, if the leaves be dying or unhealthy. There are also certain plants which appear at all times rather to deteriorate than renovate the air; on the whole, however, the balance is in favour of melioration, though the disappearance of the enormous quantities of carbonic acid gas continually pouring into our atmosphere, can scarcely, perhaps, be referred to the purifying action of vegetables alone.

Although the presence of light, air, and moisture, aided by a due temperature, are the principal requisites for the growth of plants, these are not the only essentials; for they also derive nutriment from the soil, which becomes impoverished by their growth, and ultimately incapable of supporting healthy vegetation, unless aided by manures. It is thus that the alkaline, earthy, and saline ingredients of plants are furnished; and quick growing vegetables require a constant supply of these substances.

Manures, as we have seen under that article, are of vegetable, animal, or mineral origin. The two former afford two of the essential ingredients of plants, namely, carbon, and hydrogen; they may also yield some of the more immediate principles found in vegetables. The mere existence, however, of vegetable matter in the soil, is not sufficient to constitute a manure; it must be reduced to a soluble state; to a state in which it can be absorbed by the roots of a growing vegetable; this is often effected by fermentation, or putrefaction; or by apying the vegetable matter in a green state; as by ploughing in a green crop. Where the vegetable matter is in an inert insoluble form, it will be of no avail, unless rendered active and soluble: this is effected either by mixing it with such kinds of animal matter as undergo quick putrefaction, and are themselves propitious to the growth of vegetables: such, for instance, as rotten dung, rotten fish, or decaying parts of animals; or by the operation of alkaline bodies, such as quick lime, &c.

When newly burned lime is strewed over a soil containing inert vegetable matter, it is probable that the lime renders it more or less soluble; while the lime, by absorbing moisture, carbonic, or perhaps some other acids in the soil, is slacked, and passes into the state of chalk, or some other calcareous compound, which is not hurtful to vegetables, but is sometimes a very useful addition to the soil. When, however, lime-stone contains magnesia, that earth remains caustic, and sometimes proves highly injurious.

Besides manures, other methods have been adopted for favouring the growth of vegetables by agriculturists; these methods have been distinguished by the term *rotation of crops*, and are highly deserving attention. As we have treated of these under ROTATION OF CROPS, we need not enlarge here.

The *ultimate* principles of vegetable substances are few in number; but by being combined in various proportions, they give rise to a series of compounds, materially differing from each other. *Carbon*, *hydrogen*, and *oxygen*, are the principal ultimate components of vegetables; some afford nitrogen; in some are traces of sulphur; and in their sap or juices we find small proportions of potash and lime, sometimes of soda and magnesia; these bodies are combined with acids, and are chiefly obtained by burning or incineration. Some plants contain silica; sulphate of lime is found in clover; nitrate of potash in the sap of the sun-flower, and nitrate of soda in barley. Common salt is a very frequent ingredient in marine plants;

phosphate of lime is found in oats and some other seeds; and nearly all vegetables yield traces of oxide of iron, and many of oxide of manganese.

The *proximate* principles of vegetables are chiefly separable by the action of solvents, of which the principal are cold and hot water, alcohol, ether, and a few of the acids. The number of proximate principles which are thus capable of being distinguished and separated from each other, are considerable. Those which have been most accurately examined are the following, an account of most of which will be found under their respective heads in the order of the alphabet: gum, starch, sugar, gluten, extractive matter, tannin, colouring matter, wax, fixed oil, volatile oil, camphor, resins, narcotic principle, bituminous substances, the tartaric, the oxalic, the benzoic, the citric, the malic, and the gallic acids. See BOTANY.

VEINS, in anatomy, long membranous canals or blood-vessels, which return the blood from the various parts of the body to the heart. All the veins originate from the extremities of the arteries only by anastomosis, and terminate in the auricles of the heart. The venæ cavæ on the right, and the pulmonary veins in the left auricle. They are composed, like arteries, of three coats, which are much more slender than in the arteries, and are supplied with semilunar membranes or folds, called valves. Their use is to return the blood to the heart.

The blood is returned from every part of the body, except the lungs, into the right auricle of the heart; the *vena cava superior* conveys it from the head, neck, thorax, and superior extremities; the *vena cava inferior* from the abdomen and inferior extremities; and the *coronary vein* conveys it from the coronary arteries of the heart itself.

The veins do not pulsate. The blood flows through them very slowly, and is conveyed to the right auricle of the heart by the contractility of their coats, the pressure of the blood from the arteries, the action of the muscles and respiration; and it is prevented from going backwards in the veins by the valves, of which there are a great number.

The veins arise from the extremities of the arteries, and make up trunks which accompany the arteries in almost every part of the body; and have the same names in the several places as the arteries have which they accompany. But the arteries are more deeply seated than the veins, and hence are less liable to external injury.

For farther particulars relative to the blood, see ANATOMY, ANEURISM, BLOOD, BLOOD-LETTING, HEART, LUNGS, &c., see also VARIX.

VELL, the lowest stomach of the calf, preserved by being salted for the purpose of making the liquid termed *rennet*. See CHEESE and RENNET.

Vellum. See PARCHMENT.

VENA PORTÆ, in anatomy, the great vein situated at the entrance of the liver, which receives the blood from the abdominal viscera, and carries it into the substance of the liver.

VENEERING, or FINEERING, a kind of marquetry or inlaying, whereby several thin slices or leaves of fine wood of different kinds are applied and fastened on a ground of some common wood.

This work is of two kinds: one which consists in making compartments of different woods; the other in representing flowers, birds, &c. The first is more commonly called veneering; the last marquetry.

Wood, intended for veneering, is first sawed out into slices or leaves about a line in thickness, by being placed upright in a kind of vice or sawing press. These slices are afterwards cut into slips, and fashioned in various ways according to the design proposed; the joints are carefully adjusted, and the pieces brought to their proper thickness by suitable planes; they are then glued down on a ground or block of dry wood with good glue: afterwards the work is either placed in a screw press, or has a weight placed upon it. When quite dry, it is finished with proper planes, scrapers, rasps, fish skins, sand paper, a brush, and polisher of shave-grass.

Venereal disease. See GONORRHŒA, and SYPHILIS.

Venæsection. See BLOOD-LETTING.

VENETIAN RED, a red earth used for coarse oil and water colours. It is found in various countries, but chiefly in Italy, France, Germany, Hungary, Portugal, America, and Lemnos. It is dug also in Carinthia, and manufactured at Venice, whence it is exported to all parts of the world. It is of a brighter colour than Spanish brown, but appears to be a pigment of a similar nature.

VENICE TREACLE and MITHRIDATE were two electuaries, formerly in considerable estimation; they consisted of a great number of heterogeneous ingredients, but are scarcely heard of, except amongst pretenders and quacks; they have been long expunged from our pharmacopœias. Should, however, any of our readers be attached to these exploded medicines, the *Confection of opium* will be found superior to either of them, and may be advantageously taken in their stead. See CONFECTION.

Venice turpentine. See TURPENTINE.

Venison. See DEER.

VENTILATION, in medicine, domestic economy, &c. that process by which rooms, prisons, ships, &c. are supplied with fresh and pure air, and the noxious or impure air consumed or conveyed away.

The simplest and readiest mode of changing the air of a room is, of course, by opening the doors and windows; and, if there be a fire-place, by kindling a fire; nothing, indeed, so well promotes the circulation of air in a room without inconvenience, unless it be in very hot weather, as a fire.

The ventilation of prisons, ships, &c. is not, however, so readily and simply effected; as it frequently happens in such places that no fires can be made. Several plans, to accomplish these objects, have been proposed: one of Mr. ABERNETHY, for the ventilation of ships, is described in the *Pantologia*, under the head VENTILATOR; another by Mr. TYER, is detailed in the *London Journal of Arts*, Vol. I. p. 61; another by Mr. PERKINS, for ventilating ships in the same volume, page 300; and another by Dr. M'SWEENEY, for ventilating mines, is also described in the same work, but we cannot detail them. See also the 38th Vol. of the *Transactions of the Society of Arts.*

The reader may also consult HALES' *Treatise on Ventilators*, and the *Philosophical Transactions*, Vol. 49. See also CONTAGION and TYPHUS.

VENTRICLES, a term in anatomy, applied to the cavities of the brain and the heart. See BRAIN and HEART.

VENUS, a genus of bivalve testaceous worms, the animal a tethys; it consists of one hundred and fifty-four species, scattered through the seas and coasts of the globe; fourteen common to our own coasts. They are characterized by having the frontal margin flattened, with incumbent lips; hinge with three teeth, all of them approximate, the lateral ones divergent at the tip. They are thus subdivided,—shell somewhat heart-shaped,—orbicular,—oval, a little angular near the beaks. The first subdivision contains the largest number, the third the smallest. They are of very different sizes; several of them have a near approach to the *Cockle.* The *Dione* has a shell nearly heart-shaped; it is pale pink, inhabits the American ocean, and is extremely rare and valuable. The *Dysera* has the shell also somewhat heart-shaped, varies in colour and marks, inhabits the American ocean, and is rare and valuable. The *Mercenaria*, has a thick strong shell, within pale violet; three inches long, and nearly as broad; inhabits Europe and North America; found, also, occasionally on our own coasts. The *Islandica*, inhabits Europe, Africa, the Caspian sea, our own coasts, and Iceland. Three and a half inches long, and nearly four broad.

Venus's comb. See CICELY.

VENUS'S FLY TRAP, or *Dionæa*, a genus of plants, consisting of one species only, the *Muscipula*, a native of Carolina, and in many respects a very extraordinary vegetable. The stalk is about six feet high, and the flowers milk white. They require much attention to the degree of heat and exposure to air, in order to manage them in this country, where, indeed, the seeds seldom ripen. The leaves of this plant are radical, roundish, two-lobed, fringed with stiff bristles, and so irritable as to fold together like a rat-trap, and crush insects which crawl or settle on them. The upper surface of the lobes of the leaves are covered with a great number of small red glands; insects are attracted by the sweetness or the appearance of the secretion, but the moment they touch them the two lobes rise up, grasp them fast, lock the two rows of spines together, and squeeze them to death.

Venus's looking-glass. See Bell Flower.

VERBESINA, a genus of plants comprehending sixteen species, natives of the East and West Indies; the following are cultivated; the *alata*, or Winged stalked; — the *chinensis*, or Chinese,—the *nodiflora*, or Sessile flowered,—the *fruticosa*, or Shrubby,—and the *gigantea*, or Tree verbesina. They may be increased by sowing the seeds on a moderate hot-bed, or in pots plunged into it in the early part of spring; they are afterwards managed as other tender annuals.

Verdict. See Jury and Libel.

VERDIGRIS, Subacetate of Copper, or *Subacetas cupri*, is a bluish-green substance, manufactured chiefly in the South of France. It is made by spreading the husks and stalks of grapes, after the juice is expressed from them for wine, upon plates of copper in jars. The acetic acid, which is produced in the husks, &c., by their being moistened, and having the acetous fermentation excited in them, combines with the copper, and converts the surface of the plates into a green rust. This rust is scraped off, and is the verdigris of the shops, which is brought to this country in leather bags of various sizes, from ten to twenty pounds weight or more. It is, however, now prepared also in this country; but none which we have seen is equal to foreign verdigris. Verdigris is a substance very liable to adulteration; when bought in powder it may be always suspected: the means of detecting such adulterations are difficult. As a pigment, if adulterated, its defects will be often visible enough when used. It makes one of the most elegant and permanent greens with which we are acquainted. See Colour-making. In powdering this substance care should be taken that it does not enter the mouth either by breathing, or otherwise, as it is a deleterious poison. For the treatment of those who are injured by verdigris, see Copper, Corrosive Sublimate, and Poison.

There is an article known to painters by the name of *distilled verdigris.* This is an *acetate of copper*; it is found in commerce, attached to sticks, in elegant green crystals; and is, of course, a superior pigment for many purposes. It may be made by digesting verdigris, or oxide of copper, in acetic acid; by evaporating the solution it is obtained in prismatic crystals of a fine green tint. By distillation it affords a very pure acetic acid. See Vinegar.

By the following forms useful pigments may be obtained; but not equal to French verdigris.

Corrode copper with vinegar, tartar, and common salt.

Take sulphate of copper one pound, alum, or Epsom salt, one pound; dissolve these in two quarts of water, and filter. Add sub-carbonate of potash sufficient to precipitate the pigment, and wash it thoroughly, then dry it.

A verdigris may be made by putting plates of copper into a cask, between layers of vine twigs, and moistening them with sour wine.

Take clippings of copper two pounds; sal ammoniac one pound. Moisten them with water; when the corrosion is complete wash the pigment.

Take of sulphate of copper twenty-four ounces, dissolved in a sufficient quantity of water; of sugar of lead thirty ounces, dissolved also in water; mix the solutions, filter, and crystallize by evaporation. This quantity will yield about ten ounces of crystals. It is a superior paint to common verdigris.

English verdigris. Take of sulphate of copper twenty-four pounds; of acetate of lead twelve pounds; of sulphate of zinc sixteen pounds; of alum two pounds. Let them be all coarsely powdered, put in a pot over the fire, and stirred till they are united into a mass.

As a medicine verdigris should never be given internally; although it is said to be, in very small doses, tonic, and in larger, emetic. It is a useful detergent and escharotic application to foul ulcers, the callous edges of sores, and to consume fungous flesh. See BASILICON and LINIMENT.

Verditer. See COLOUR-MAKING.

VERJUICE, the juice of the wild apple, usually termed crab. It does not appear to possess any properties deserving particular notice. It is occasionally employed, we believe, in some of the arts, where a weak acid is useful; but for culinary and medicinal purposes common vinegar is unquestionably to be preferred.

VERMICELLI, a composition of flour, cheese, yolk of eggs, and sugar, reduced to a paste, and formed into long slender pieces like worms, whence its name. The slightest reference to its composition must convince us that it cannot suit the dyspeptic stomach.

VERMIFUGE, a medicine which destroys worms: an anthelmintic.

VERMILION, a well known red pigment, composed of quicksilver and sulphur. See CINNABAR and QUICKSILVER.

VERNAL GRASS, SPRING GRASS, or *Anthoxanthum*, a genus of plants, consisting of four species, of which the *Odoratum* is common to our own meadows, and chiefly gives the fragrance to our new-mown hay. The *Secunda*, of Malabar, resembles an oat.

Vertebræ. See SPINE and SPINAL MARROW.

VERTICIL, in botany, a whorl. See WHORL.

VERTIGO, in medicine, a giddiness; it is mostly symptomatic. It is a very common attendant on dyspeptic complaints. In its cure or removal attention must, of course, be paid to the primary disorder.

VERTIGO, called sometimes *meagrims*, in farriery, a slight degree of apoplexy, which at times makes a horse stagger or reel, particularly when going rather fast; he does not, however, often fall. The fit, generally, soon goes off, by suffering him to stand quietly a short time; and if he falls, the fit usually soon leaves him, and he gets up again. Moderate bleeding, and a mild purgative are the best remedies.

VERVAIN, or *Verbena*, a genus of plants, comprehending nineteen species, chiefly natives of America; a few of the East Indies and of Europe; one common to our own country. They are distinguished by having a nearly equal, curved funnel-form, corol; and are subdivided into,—with two stamens and two seeds,—with four stamens. The following are cultivated: the *Indica*, or Indian,—the *supina*, or Trailing,—the *orubica*, or Betony-leaved,—the *Jamaicensis*, or Jamaica,—the *Mexicana*, or Mexican,—the *globiflora*, or Globe-flowered,—the *bonariensis*, or Cluster-flowered,—the *trastata*, or Halbert-leaved,—the *triphylla*, or Three-leaved,—and the *officinalis*, or Officinal vervain. The last, called sometimes Simpler's joy, was formerly in the materia medica, and many superstitious stories have been related of its efficacy, but it is deservedly neglected. It is found wild on our road sides; the flowers are pale blue; the leaves many cleft, jagged. Sheep eat it; cows, horses, and goats refuse it.

Vervain Mallow. See MALLOW.

VETCH, TARE, or *Vicia*, a genus of plants, consisting of forty-four species, scattered over the globe; seven common to our own coasts and hedges. They are subdivided into,—peduncles elongated,—flowers axillary, nearly sessile. The following are chiefly deserving of notice.

The *Sativa*, or Common vetch, has

oblong ovate leaflets, the lower ones obtuse, with a point; flowers light and dark purple: pods erect; seeds black. It is well known to be an excellent fodder for horses; a native of our own corn fields.

The *Cracca*, or Tufted vetch, has the stem branched, three or four feet long; peduncles many-flowered, longer than the leaves; flowers imbricate, numerous, pendulous, purple; leaflets lanceolate; a native also of our own country, and found wild in our hedges; the roots are perennial, stalks annual; but, in consequence of their disposition for running, not well calculated for field culture.

The *Faba*, or Common bean, of which there are numerous varieties. See BEAN.

The cultivation of the *Sativa*, or common vetch, is very common in this country, chiefly as an article for soiling. See ROTATION OF CROPS, and SOILING.

It is distinguished into two kinds, the *winter* and the *spring* tare: both are, most probably, varieties of the same species. The former is, however, the most hardy, and resists the effects of the severest winters in this climate. The seeds of the winter and spring tares are not easily discriminated, being nearly alike; but on the appearance of the blade the difference in the plant is at once perceptible; the winter tare vegetates with a seed leaf of a fresh green colour, whereas the spring tare comes up with a grassy spear, of a brown dusky hue. There is also another variety, called the *white* tare, but it is tenderer than the spring tare, and therefore seldom cultivated.

The tare will grow without difficulty on almost every kind of soil, but flourishes in the most vigorous manner on gravelly loams, which are not too moist. In the preparation of land for this crop less care is necessary than for many other sorts of grass crops, as it will succeed well where the soil has not been much broken down, or reduced into fine mould; but it always grows best where a degree of fineness has been produced in the land. Two ploughings, with occasional harrowings, are, in general, sufficient. They are sometimes sown on one ploughing, for winter crops; but this is not a commendable practice; and, in soils which are not rich, manure will be advantageous.

As the seed of the spring tare does not succeed well when sown for a winter crop, nor that of the winter kind when put in for the summer produce, care should be taken to keep the seed of the two sorts as perfectly distinct as possible. In dry seasons it may be useful to steep the seed, in order to promote its quick vegetation. The quantity of seed should vary according to the nature of the soil, and the method of sowing. From two to three bushels per acre is the usual quantity for broadcast. In the drill method, at six inches distance in the drills, two bushels are enough. When, however, the crops are either to be cut for soiling, or to be fed down, the quantity of seed should be increased. The time of sowing must vary with the intention of the cultivator: winter tares should be sown some time between August and October. For spring tares, from the latter end of February to the end of March, or beginning of April, may answer very well; but the more early period is, in general, the best. Spring tares, with cole seed, have been also recommended to be sown in June, as a nutricious food for weaned lambs in autumn. Crops of this sort are mostly cultivated after wheat or barley; but they may be grown after almost any kind, where the land is in good heart.

As this crop covers the land in a very complete manner where it is sufficiently full, it requires little after culture. It is, however, occasionally hoed, when drilled; and they are also occasionally rolled, in the early spring months, in order that they may be in better order for the scythe.

When this crop has been suffered to go to seed, it is the usual practice to cut and *wad* them, in the same manner as peas, in order to their being afterwards housed, or stacked, and threshed out in the winter.

In making this crop into hay, more attention is necessary than in most of the artificial grasses, as wet is more injurious to it, and it requires more sun and air; but in other respects they demand the same cautious management to preserve the foliage from being lost. The time for cutting, for this purpose, is when the blossoms have declined, and they begin to fall flat. This hay is very nutricious. Three tons of dried tares are sometimes obtained per acre. Forty bushels of seed have been sometimes obtained per acre. But the most beneficial method of employing this crop is, unquestionably, in soiling.

VETCH, the Bitter, Heath-pea, or *Orobus*, a genus comprising thirteen species; all European plants: two indigenous to the woods of our own country. The following are cultivated: the *lathyroides*, or Upright, the *luteus*, or Yellow, the *vernus*, or Spring, the *tuberosus*, or Tuberose, the *nigrus*, or Black, the *pyrenaicus*, or Pyrenean bitter vetch. They are all hardy, flowering, ornamental plants, for borders, clumps, and other parts of pleasure grounds. The Highlanders of Scotland are particularly fond of the *tuberosus*, or wood-pea, as it is frequently called; it is there also used to flavour liquids, diet-drinks, &c.

Vetch, the Kidney. See Kidney Vetch

Vetch, the Liquorice. See Milk Vetch.

Veterinary Science. See Farriery.

Viburnum. See Guelder rose.

Vice. See Right.

Vicuna. See Camel.

Vigilance. See Bed time, Incubus, Sleep, and Somnambulism.

VINE, or *Vitis*, a genus of plants consisting of twelve species, all natives of the East Indies, and America, except the *Vinifera*, which is found in most temperate climates. The following are cultivated:

The *Vinifera*, or Common vine, the *Indica*, or Indian vine; the *laciniosa*, or Parsley-leaved vine; and the *arborea*, or Pepper vine.

The first is, by far, of the most consequence; it is characterized by having lobed, sinuate, naked leaves. The varieties are numerous, amongst which, those bearing grapes, named as follow, are some of the principal; the Black sweet water, White early ditto, White muscadine, Black cluster, Small black cluster, Black Hamburgh, White ditto, Royal muscadine, St. Peter's, Red Hamburgh, Black Burgundy, and Damascus; Frontigniac red, black, white, &c; Malmsey muscadine, Blue chasselas, White ditto, Black muscadel, White ditto, Large Syrian, lacœur, or Morocco grape, Damson grape, White muscat of Alexandria, Red Alexandria; Claret grape, Raisin, Tokay, &c. To which may be added some kinds that have been lately brought into culture, viz. The *varigated chasselas*, the *Pitmaston white cluster*, and the *Esperione.* Of the preceding varieties, some of the large and late sorts as the Syrian, Alexandrian, and Tokay, require a hot-house; and, by assistance, many other sorts are brought earlier and to superior perfection.

They are all propagated by layers or cuttings; the last method is supposed to be the best. In propagating vines, by cuttings, such shoots should be chosen as are strong, and of the last year's growth; these should be cut from the old vine just below the place where they were produced, taking a knot of the two years' wood to each, which should be pruned smooth. The upper part of the shoot should then be cut off so as to leave the cutting about sixteen inches long. These cuttings should be taken from the tree in the month of February, and are to be placed with their lower part in the ground in a dry place, laying some litter about them to prevent them from drying. Here they should remain till the beginning of April, which is the time to plant them. They are then to be taken up and wiped clean; and if very dry, they should stand with their lower parts in water six or eight hours. Then, having prepared the beds for them, they are to be set at about six feet distance from each other, making their heads slant a little towards the wall. The cuttings must be so buried in the ground, that only the uppermost bud may be upon a level with the surface; the earth is then to be well closed about the plant, and a little mould heaped over the eye of the bud to keep it from drying. As the shoots grow, they should be nailed to the wall, and all the side shoots should be rubbed off. The following Michaelmas, if the cuttings have produced strong shoots, they should be pruned down to two eyes. The following summer all the lateral shoots must be rubbed off as soon as they appear, and only those from the two eyes which were left must be encouraged; these, as they grow, must be nailed up against the wall, and in the middle of July, should be shortened by nipping off their tops, which will greatly strengthen them. The succeeding Michaelmas, they should be pruned, leaving each branch with three eyes if strong, but if weakly, only two. The following Midsummer the ends of the shoots are to be pinched off as before; and all the weak lateral shoots are to be displaced. Young vines require no other culture.

In the management of grown vines it should be observed, that these rarely produce any bearing shoots from wood that is more than one year old; great care must be always taken to have plenty of this wood in every part of the tree. The bearing shoots for the following year should be left at the pruning with four eyes in each; if more be left, the fruit will be poorer. These shoots must be laid in at about eighteen inches asunder against the wall. The best season for pruning vines is the end of September, or begining of October. The cut should always be made just above the eye, and sloped backwards from it; and when there is an opportunity of cutting down some young shoots to two eyes, in order to obtain vigorous shoots for the next year's bearing, it should be done. The vine may, however, be pruned in any of the winter months, in open weather. If it be not pruned in October, the best months are, perhaps, January and February. When it is delayed later, the vine is apt to *bleed* or emit a quantity of sap, which must be, of course, injurious.

In May, when the vines are shooting, they should be looked over, and all the shoots from the old wood should be rubbed off, and also the weaker, whenever two are produced from one eye; the branches as they grow should of course be nailed to the wall; and towards the latter end of the month the ends of the bearing branches at the distance of two knots from the fruit, should be nipped off; and the branches so nailed that the fruit may be as near to the wall as possible, in order to promote its growth. The branches which are to bear the next year should not be stopped before the beginning of July.

In order to make vines fruitful, some warm manure will be of service.

Grapes, as every one knows, are a delicious summer fruit, and when eaten in moderate quantity, are not unwholesome. In the warmer countries of Europe they are dried into raisins. See RAISINS. The juice, when fermented, forms a great variety of wines. See WINE, and SPIRIT.

VINEGAR, or *acetum*, is a well-known acid fluid, obtained from various vegetable substances. It is usually of an amber colour, which is most commonly added to it by a solution of burnt sugar.

When any of the vinous liquors are exposed to the free access of atmospheric air, at a temperature of 80° or 85°, they undergo a second fermentation, terminating in the production of a sour liquid called vinegar. The vinegar of this country is usually obtained from an infusion of malt; wine, cider, &c. are also occasionally used in its manufacture. Good vinegar may also be made from a weak syrup consisting of 18 ounces of sugar to every gallon of water.

The process of making vinegar in this country is usually thus: mash the malt in hot water, and after the liquor is drawn off and is about the temperature of 75°, add a sufficient quantity of beer yeast. After thirty-six hours it is racked off into casks placed upright, having a false cover pierced with holes at about a foot from the bottom; on this a considerable quantity of rape, or the refuse from the makers of British wine, or otherwise a quantity of low-priced raisins, is laid. The liquor is turned into another cask every twenty-four hours, in which time it has begun to grow warm. And it is thus shifted from one cask to the other, till the vinegar is made. If vinegar be made with sugar and water, as above mentioned, it should be also shifted every day, and the *rape* will be found useful to assist in its conversion. But the presence of atmospheric air is essential to the acetous fermentation.

There are four kinds of vinegar known in commerce: viz. the vinegar from wine, &c; the vinegar from malt; the vinegar from sugar; and the vinegar from wood. The acid in all these is precisely the same, and is called by the chemists the *acetic acid*. The vinegar from wood, called *pyrolignous acid*, is now prepared in large quantities in London, and sold of eight times the strength of common vinegar, so that it may be diluted by the purchaser at pleasure. It is perfectly colourless, and is very superior to common vinegar, as it contains no mucilaginous matter; and from the concentrated state in which it may be obtained, it is well suited for a variety of purposes, for which common vinegar is very unfit. Its smell is pungent and grateful. But it ought not to be taken without being diluted with water. It is obtained by submitting wood in iron retorts, to a strong red heat; the hard woods such as oak, ash, birch, and beech, are chiefly used. It is purified from its empyreumatic smell, by distillation in a copper still, and afterwards by re-distillation with quick lime. This pyrolignous acid is prepared of a very good quality by Dr. BOLLMAN, at Battersea. By a paper of Mr. RAMSAY's, in No. 5, of the Edinburgh Philosophical Journal, it appears that this acid may be used with advantage in the preservation of various kinds of animal food. See SMOKING. But it is said not to be so well calculated for pickling vegetables.

The pyrolignous acid is now prepared also in the large way at Neath. The furnaces, or distillatory vessels, are about 4 feet by 3, and 6 feet deep, and will hold about 15 cwt of wood; the door is made air tight by a luting of clay and horse-dung, and is not opened for twelve hours; the fire is raised sufficiently to produce a slight glowing heat on the floor of the furnace. All kinds of wood are used; the drier the wood the stronger the acid. One ton of wood yields about 100 gallons of weak acid, &c.; this being saturated with chalk, and the solution evaporated to dryness, sulphuric acid, diluted with an equal portion of water, is added in such proportion as to leave the sulphuric acid in excess. From this liquor the acetic acid is distilled, and after undergoing another distillation, becomes a highly concentrated acid. One hundred gallons of the first liquor yielding about 30 of the last. The residual charcoal is, it is said, equal to the wood employed.

Acetic acid may be procured in a pure state thus. Distil acetate of copper (see VERDIGRIS) in a glass retort, heated gradually nearly to redness; it requires redistillation to free it from a little oxide of copper which passes over in the first instance. Acetic acid may also be obtained by distilling acetate of lead (see LEAD), with half its weight of sulphuric acid. The acid obtained by these processes is transparent and colourless, its odour highly pungent, and it blisters and excoriates when applied to the skin. Its specific gravity is 1,080. It is extremely volatile, and its vapour readily burns; it combines in all proportions with water, and when considerably diluted resembles distilled vinegar. When highly concentrated it crystallizes at the temperature of 40°, but liquefies when its heat is a little above that point; combined with aromatics, it forms the aromatic vinegar of the shops. Its ultimate components are carbon 46,83, oxygen 46,82, hydrogen 6,35—100

Vinegar is an antiseptic, and as such is used for pickling and preserving both animal and vegetable matter; it is also a very agreeable, and we believe a very useful condiment: taken in moderate quantity it appears to be grateful to the stomach and to contribute to the digestive functions. Both common vinegar, and the pure acetic acid, have sometimes the sulphuric acid fraudulently mixed with them, to give them strength. The adulteration may be detected, by the addition of a little chalk short of their saturation. With pure vinegar the calcareous base forms a limpid solution, with sulphuric acid, a white insoluble gypsum; muriate of barytes is a still nicer test.

As a medicine, vinegar acts as a refrigerant, promoting perspiration and the discharge of urine; in inflammatory fevers, it may be used to acidulate the ordinary beverage. It is also employed as a clyster in obstinate costiveness; and externally in the form of fomentation or lotion, to burns, bruises, sprains, and chronic opthalmia; it is the best lotion for clearing the eye of small particles of lime, when they adhere to any part of the ball, or the lids. The dose of vinegar is from one fluidrachm to two; the quantity given in clysters is from one fluidounce to two.

The medical properties and uses of *distilled vinegar*, some years ago improperly called *acetous acid*, are the same as common vinegar, but as it is purer and not liable to spontaneous decomposition, it is fitter for pharmaceutical purposes.

Some of the combinations of the acetic acid are valuable and important, both as articles of commerce and as medicines.

For *acetate of lead* and *solution of subacetate of lead*, see LEAD. For *acetate of Copper*, see VERDIGRIS.

Acetate of ammonia, or *solution of acetate of ammonia*, formerly called *spirit of mindererus*. Take of subcarbonate of ammonia half an ounce; distilled vinegar one pint. Add the acid to the subcarbonate of ammonia until the effervescence ceases. This is a useful medicine to promote perspiration in febrile complaints. It may be combined with opium, camphor, antimonials, or nitrate of potash. The ordinary dose is from two fluidrachms to twelve, given every three or four hours. It is also used externally as a discutient lotion to inflamed surfaces.

Acetate of potash, formerly called *diuretic salt*, is mildly cathartic and diuretic. It is occasionally useful in febrile affections and jaundice, but its principal use is in dropsies and other diseases, in which a copious discharge of urine is required. To produce the latter effect the dose may be from one scruple to one drachm, given every three or four hours, in any bland fluid. As a cathartic the dose is from two to three drachms.

VIOLET, or *Viola*, a genus of plants containing forty species, scattered over Europe, the West Indies, and America; a few over India; six common to our own country. They are thus subdivided;—without stem,—caulescent,—stipules pinnatifid; stigma cup-shaped,—flowers erect, not reversed. The following are cultivated.

The *Odorata*, or Blue, Purple, or odorous violet, with flowers single, deep purple, and of an agreeable smell. The flowers are used for preparing a *syrup*, which is still kept in the shops, but is of no medicinal importance whatever. An aqueous tincture of the flowers, as well as the syrup, are useful tests of the presence of uncombined acids and alkalies; the former changing the blue colour to a red, the latter to a green. The infusion is not liable to change if it be kept in a tin flask, well stopped.

Syrup of violets may be made thus: Take of the flowers of the odorous violet two parts; boiling water eight parts; refined sugar fifteen parts. Macerate the flowers in the water for twenty-four hours, in a covered glass, or earthenware vessel; then strain without expression, and add the sugar.

There is a variety of this species even more odorous than the purple violet, with *white* flowers. Both are plentiful in various parts of the kingdom. They may be propagated by seeds, or separation of the roots. A variety of the purple is found in gardens, with double flowers.

The *Canina*, or Dog's violet, is found in our copses. Its root is said to be emetic and purgative. The *palmata*, or Palmated; and the *pedata*, or Multifid violet, may also be mentioned.

The *Tricolor*, Pansy, Heart's-ease, or Love in idleness, and called, indeed, various other names, is a well-known beautiful little plant, of which there are several varieties, found occasionally in our corn-fields, but more commonly in our gardens. It is propagated by seeds, or by parting the roots; it blossoms almost the whole of the summer months. Milton has described this little flower with laconic elegance:

> "The pansy freak'd with jet."

It was formerly used medicinally, but its virtues are unknown to modern medicine.

Violet, Dame's. See ROCKET.

VIOLET, the DOG'S TOOTH, or *Erythronium*, a genus consisting of one species only, a native of the south of Europe. There are, however, many varieties; some with pale red, others deep red, others yellow, crimson, or white flowers. It is often found in our green-houses, and is naturalized without difficulty.

VIPER, ADDER, or *Coluber berus*, is a poisonous serpent, found in this country, and various other parts of the world. The flesh was formerly eaten as a remedy in some diseases, but it is of no importance. See SERPENT; where a more particular account of this animal will be found, and also the mode of treating persons who have been bitten by it. See also POISON.

VIPER'S BUGLOSS, or *Echium*, a genus consisting of twenty-seven species, chiefly Cape plants; but many from the East; two, the *Italicum* and *Vulgare*, indigenous to our own country. The last is said to be peculiarly grateful to bees.

Virginian acacia. See ACACIA.

VIRGINIAN SILK, or *Periploca*, a genus comprehending thirteen species, chiefly Asiatic plants; a few of the Cape: the corol is twisted, nectary surrounding the parts of fructification, putting forth five threads. The following are cultivated: the *Græca*, or Common Virginian silk, with a shrubby stem, clasping any support; more than forty feet high, and sending out slender branches, which twine round each other; leaves ovate, lanceolate, about four inches long; flowers purple, terminal, in bunches; a native of Syria, flowering in July and August, but rarely ripening its seeds in this country. The *secamone*, or Green;—the *Indica*, or Indian,—and the *Africana*, or African periploca. The first sort often succeeds by cuttings, and is the only one which will bear the open air of this country. They may all be obtained by sowing seeds, procured from abroad, in pots of light earth, plunged in a hot-bed. They all require props to succeed well.

Virgin's bower. See CLEMATIS.

Virtue. See RIGHT.

VISCUS, (plural VISCERA,) any organ or part, which has an appropriate use, such is the stomach, the liver, the heart, &c.

Vision. See EYE, SIGHT, and SPECTACLES.

VITRIOL, a term applied to articles of very different qualities: thus we say, blue vitriol, (*sulphate of copper*); white vitriol, (*sulphate of zinc;*) and green vitriol, (*sulphate of iron*). The term vitriol is also sometimes applied to the sulphuric acid of different degrees of strength; concentrated sulphuric acid is also commonly called *oil of vitriol.* The term vitriol ought, however, to be expunged from modern and correct writing. We have, it is true, occasionally employed it in our work, but chiefly as a medium to lead our readers to the use of more correct and definite terms. See COPPER, IRON, SULPHUR, ZINC, &c. &c.

Vitriolic acid. See SULPHURIC ACID.

VIVERRA, a genus of animals comprising thirty-two species, scattered over the globe; they are distinguished by six fore-teeth, intermediate ones shorter; tusks on each side longer; grinders more than three; claws not retractile. The body is long, of equal thickness; legs short; ears small; snout pointed; between the anus and genitals an orifice leading to a duct, secreting an unctuous fetid matter; active and swift; some walk, some climb, and some burrow; females produce many at a litter. Many of these approach to the tribe *mustela*; see OTTER, *&c.*; whence the popular name of *weasel* is applied to many of the species of both genera. All, however, of the viverra tribe, are exotic to our own country. The following are examples:

The *Ichneumon*, Ichneumon weasel, or Pharaoh's rat, has the tail thick at the base; tapering, tufted; great toes remote; eyes bright, flame coloured; hair hard, coarse; colour various; yellowish brown and white; pale brown, and mottled; length from the nose to the extremity of the tail sometimes forty-two inches. Inhabits Egypt, Barbary, and India, and the Indian islands; a most useful animal, being the inveterate enemy of serpents, and other noxious animals which infest the torrid zone; destroying not only the eggs of the crocodile, and the young, but the cobra de capella, rats, mice, &c.; it grows very tame, and is very active, springing on its prey with great agility.

The *Tetradactyla*, Four-toed weasel, or Surikate, has the snout long, moveable; colour above undulated, or wavy, blackish; body eleven inches long; tail eight; inhabits the Cape of Good Hope, where it is called the Meer rat; feeds on flesh, preys on mice, the cock-roach, &c. It is found also in Java.

The *Candivolva*, or Yellow weasel, is yellow mixed with black; tail prehensile; body nineteen, tail seventeen inches long; supposed to be a native of Jamaica.

The *Prehensilis*, or Mexican weasel, is olive yellow, mixed with grey and brown; tail long, prehensile; nose short; tongue very long. Naturally good-natured, and has many of the actions of a monkey. Eats like a squirrel. It has a variety of cries during the night, one like a low barking of a dog; another like the cooing of a dove; its menace a hissing like a goose, or serpent; very fond of all sweet things, and will eat vegetables; but catches poultry and sucks their blood without tearing them.

The *Nasua*, or Brasilian weasel, is tawny; body eighteen, tail thirteen inches long. A variety called the Dusky Brasilian weasel; both natives of Brasil and Guiana.

The *Vulpecula*, or Stifling weasel, is entirely chesnut; length from nose to tail about eighteen inches; inhabits Mexico and North America; this, and the four following species are remarkable for the pestiferous, suffocating, and most fetid vapours, which they emit from behind, when attacked, pursued, or frightened; and which is their only means of defence.

The *Putorius*, Striated, or Striped weasel, is blackish, with five dorsal, parallel, whitish lines; size of an European pole-cat; inhabits North America; digs holes; climbs trees.

The *Mephitis*, or Skunk, has the back white, with a longitudinal black line from the middle to the tail; belly and legs black; less than the last species; inhabits Peru and North America, as far as Canada.

The *Zorilla*, or Zorilla, is variegated with black and white; inhabits Peru and other parts of South America; less than the preceding.

The *Capensis*, Cape weasel, or Ratel, is black, back grey, edged with white; no external ears; length of the body forty, tail twelve inches; fore-claws an inch and three quarters, hind claws an inch long; inhabits the Cape of Good Hope; lives on honey, and is a great enemy to the bees; it listens to the honey guide cuckoo, in order to find out their nests. Hairs stiff, hide tough; not easily destroyed by dogs. Emits the same intolerable vapour as several of the preceding.

The *Civetta*, or Civet, has the tail above spotted, brown towards the tip;

mane chesnut; back spotted with cinereous brown. This species, though it has been called civet cat, has no resemblance to a cat but in its agility; inhabits India, the Philippine Isles, Guinea, Ethiopia, and Madagascar: length about two feet three inches, tail fourteen inches. The perfume called *civet* is produced from the orifice under the anus, in both sexes, secreted by peculiar glands. Persons who keep them are said to procure the civet by scraping the inside of this bag, twice a week, with an iron spatula, getting about a drachm each time; but it is seldom sold pure, being generally mixed with suet or oil. They are fed, when young, with pap made of millet, and with a little flesh, or fish; when old with raw flesh. In a wild state they prey on fowls, &c.; size that of a cat.

The *Zibetha*, or Zibet, yields the same perfume as the preceding, but it is more various in its colours; tail annulate. Both these animals appear to have been unknown to the ancients; the zibet is found wild in Arabia, Malabar, Siam, and the Philippines; it is ferocious, and hardly tameable; eats small animals, birds, fishes, &c.; climbs and runs with ease.

The *Genetta*, or Genet, has the body spotted, blackish, tawny; tail annulate; size that of a marten, but the fur shorter; smells faintly of musk, and, like the civet, has an orifice beneath the tail; inhabits Turkey, Syria, Spain, and the South of France; they are kept tame in the houses at Constantinople, and are as useful as cats for catching mice; seventeen inches long.

The *Fossa*, or Fossane, has an annulate tail; body cinereous, spotted with black; inhabits Madagascar, Guinea, Cochin China, and the Philippine Isles; fierce, and hard to be tamed: it is sometimes called by Europeans wine-bibber, as it is very greedy of palm-wine. Like the rest of the genus it is destructive to poultry; when young, flesh good; it has not the civet odour.

The *Malaccensis*, or Malacca weasel, has a long annulate tail, body grey, dotted above with black; fierce, active, leaping from tree to tree; smells of musk; size and habits of a cat.

The *Fasciata*, or Striped fitchet, has the hair long, black, and tawnyish; body grey, with six long black stripes, beneath white; two feet nine inches long; inhabits India.

The *Maculata*, or Spotted fitchet, has the body black, irregularly spotted with white; about one foot and a half long; inhabits New South Wales.

VOICE, the sound emitted from the mouth. The principal organ of the voice is the larynx: for, when this is injured, the air passes through the windpipe without yielding any sound. See HOARSENESS.

VOLCANO, a burning mountain, hollow below, and communicating, perhaps, with cavities still deeper than its own, from which it is supplied with fire and ignited materials, which it usually throws up at uncertain intervals, through one or more external apertures or spiracles.

Volcanoes constitute the most striking phenomena in nature. Their number is also very considerable, nearly two hundred having been reckoned by different writers. There is an immense range of them running from north to south on the continent of South America, occupying the summits of many of the Andes, as well as of the Mexican and Californian ridges. There is also a considerable number spread along the eastern coast of Asia, and sprinkling the Indian islands. Iceland, alone, contains eight volcanoes. One of the loftiest is the Peak of Teneriffe, though at present less frequent in its eruptions than many others. The two volcanoes with which we are best acquainted, are those of Etna and Vesuvius. The former has been burning as far back as European history goes.

The form of volcanic hills is usually conical, of which the outline of the Bay of Naples presents a fine panorama. One of its hills may serve to give some idea of the vast powers of subterranean agents; it is about 1000 feet high, and three miles in circumference, and was raised in 1538, in a single night. In June 1811, a volcano was discovered in the sea off the Island of St. Michael, one of the Azores; and it formed an island about a mile in circumference.

Until lately, the cause of volcanic fire was referred to sulphur, coal, and other common inflammable matters which were supposed to be burning in immense masses within the earth, and thus give rise to the tremendous explosions and ejections of lava and stones attending the eruption; but the products ill accord with such an explanation. Earthy, alkaline, and stony bodies united, form the lava, (see PUMICE,) and steam and hydrogen gas accompany its throwing forth; and as the products of combustion always have a reference to the combustible, such matters were not likely to be produced from sulphur and coal. The discoveries of Sir. H. DAVY, have enlightened this, as well as every other branch of chemistry, and from them we may deduce a very adequate solution of the problem of volcanoes. For we have only to suppose the access of water to alkaline and earthy bases, and we are possessed of all that is wanted to produce the tremendous effects of earthquakes and volcanoes. What power indeed can resist the expansive force of steam, and the sudden evolution of gaseous fluids, accompanied by torrents of the earths in igneous fusion, to which such a concurrence of circumstances would give rise, and which are the actual concomitants of volcanic eruptions? See GALVANISM.

Voltaic Apparatus. See GALVANISM.

Voltaism. See GALVANISM.

VOLUTE, MITRE, or *Voluta*, a genus of testaceous worms, the animal a limax; shell one-celled, spiral; it consists of one hundred and forty species, thus subdivided :—aperture entire, —subcylindrical, emarginate,—oboval, effuse, emarginate,—fusiform,—ventricose; spine papillary at the tip. They are scattered over the coasts and marshes of the globe; several of them resemble the *Helix*, or House snail: others the *Murex*, or Purple fish. The *Auris midæ*, or Midas's ear, is found in the marshy woods and swamps of India; about four inches long; shell brown, solid, wrinkled, or striate. The *Monilis*, or Necklace volute, inhabits China, where it is used to make beads and necklaces; one inch and a half long; another variety, found in Africa, two and a half inches long. The *Episcopalis*, or Mitre volute, is found in India; the fish is said to be poisonous. The natives of the inland of Tanna fix the shell, which is five inches long, in a handle, and use it as a hatchet.

VOMER, in anatomy, a bone of the nose, situated in the cavity of the nostrils, which it divides into two parts.

VOMICA, an abscess of the lungs. See LUNGS, and PULMONARY CONSUMPTION.

Vomit-nut. See NUX VOMICA.

VOMITING, a forcible ejection of food or any other substance from the stomach, through the œsophagus and mouth. It is an effort of nature to expel whatever molests or is troublesome in the stomach. It is sometimes produced specifically, by medicines taken for the purpose of emptying the stomach of its contents. See EMETICS. Vomiting is an attendant on various diseases.

In the removal of spontaneous vomiting, attention must be paid to its probable cause; if from improper food, perhaps large doses of chamomile tea, or a gentle emetic, such as one scruple of ipecacuanha, taken in a glass of water, to promote the ejection of the offending matter, may be of service; in long-continued vomiting, where there is reason to conclude that the stomach is empty, and no inflammation be present, biscuit soaked in brandy, a few drops of laudanum, strong beef tea, or the saline draught and lemon juice, according to circumstances, will be found useful; in such cases no weak slops whatever should be given. For the vomiting arising from various poisons, see POISON, &c.; see also CHOLERA MORBUS.

For *vomiting of blood.* See HÆMORRHAGE.

The *vomiting of infants* at the breast, if the milk ejected be curdled, and the motions at the same time green, and of an acid odour, will be best corrected by small doses of magnesia and rhubarb, or the chalk mixture.

VORTICELLA, or **Wheel Animal**, a genus of worms consisting of fifty-seven species, having a contractile, naked body, and furnished with ciliate, rotatory organs. They are found in stagnant waters, in seas, adhering to sea wrack, in rivers, adhering to confervæ, sometimes in fresh waters, appearing like a point. They are subdivided into,—seated on a pedicle or stem,—furnished with a tail,—without tail or stem. The *Racemosa*, is found in stagnant water; the *Polypina*, appears to the naked eye like a white point, adheres to sea wrack, and is found in the European seas. The *Ampulla* is contained in a pellucid bag, shaped like a common water bottle, in which the animalcule is placed sometimes at the bottom, and sometimes nearly filling it. The *Viridis* is cylindrical, green, appearing to the naked eye a mere green point; found in fresh water.

VULTURE, or *Vultur*, a genus of birds comprehending seventeen species, scattered over the globe, all of them exotic to our own country. They are distinguished by a straight bill, hooked at the point; head bare of feathers, with a naked skin in front; tongue cleft, neck retractile. They are a rapacious tribe, feeding on carcases however putrid; but, unless pressed by hunger, seldom attack living animals; they are bold, gregarious, fly slowly, unless when very high in the air; smell exquisite. The following are the chief:

The *Gryphus*, or Condor, is of prodigious size; caruncle on the crown as long as the head; throat naked; measures, with the wings extended from tip to tip, not less than fourteen or sixteen feet; builds under the protection of the highest rocks; lays two white eggs; it is a bird of fearful and enormous power, but, happily for mankind, in every country extremely rare. Inhabits South America, Asia, and, probably, other parts of the world. Breast, neck, and wings, light brown, the back darker; legs and toes covered with black scales; claws black, three quarters of an inch long.

The *Papa*, or King of the vultures, has the nostrils carunculate; crown and neck naked; a native of America; it is larger than a turkey cock; but is chiefly remarkable for the odd formation of the skin of the head and neck, which is bare. This skin arises from the base of the bill, and is of an orange colour, from whence it stretches on each side to the head; thence it proceeds like an indented comb, and falls on either side, according to the motion of the head; the eyes are surrounded by a red skin, and the iris has the colour and lustre of pearl. This bird has been placed at the head of the vulture tribe, on account of the superior beauty of its external appearance; but it is no way distinguished from the rest by the generosity of its manners, or delicacy of its appetite. It attacks only the weaker animals, devouring rats, lizards, serpents, and every kind of excrement and filth; flies very high.

The *Aura*, or Carrion vulture, has the body greyish brown; quill feathers black; bill white; another variety with body black; quill feathers brown; bill cinereous; size of a wild goose; inhabits Brazil, Guiana, Peru, and some of the West Indian islands, and Africa; seen in large flocks; feed on carrion, crocodile's eggs, &c.; and sometimes attack the ox when alive.

This species is, it is said, also found in some parts of Europe.

The *Cristatus*, or Crested vulture, has the body blackish red; head crested; breast rufous; smaller than the last; but extremely active and voracious; lives on hares, rabbits, foxes, fawns and fish; found in some parts of Europe.

The *Percnopterus*, or Aquiline vulture, has the quill feathers black, the outer edges, except the outermost, hoary; another variety with the body reddish ash, spotted with brown; inhabits Egypt, Syria, and Persia; it is encouraged in Cairo to devour dead carcases, and in Palestine to destroy the mice which swarm in the fields. In Egypt it was formerly a capital crime to destroy one of these animals.

W.

WACKE, a mineral substance intermediate between clay and basalt. Its colour is greenish grey; it is massive and vesicular, dull and opake; streak shining; soft and easily frangible; its specific gravity is about 2,9. It occurs sometimes in beds and veins; these veins contain very small portions of ores of different kinds, as bismuth, silver, glance, and magnetic iron-stone. It sometimes contains hornblende and mica.

Wadd. See BLACK WADD.

WAFERS, for sealing letters, are made by mixing fine flour with glair of eggs, isinglass, and a little yeast, and beating the mass into a paste; then spreading it, when thinned, with gum water on smooth tin-plates, cutting it into the size desired, and drying them. The different colours may be given by tinging the paste with Brasil wood or vermilion, for red; indigo or verditer for blue; saffron, turmeric, or gamboge, for yellow, &c.

A patent has been lately taken out by Mr. JOHN HUDSWELL for improvement in the manufacture of wafers; it consists in *strongly pressing* the wafer sheet after it is made, it being damped for the purpose, and before it is cut into wafers, in order to render the wafer thin, by which the wafer more effectually seals a letter and prevents its being so readily opened.

WAGER. Although, in general, a wager is not considered illegal if it be not an incitement to a breach of the peace, or to immorality, or if it do not affect the feelings or interest of a third person, or expose him to ridicule, or if it be not against sound policy, yet we cannot avoid considering all wagers as a species of gaming, and highly injurious to the morals of the community in various ways. See AMUSEMENT, CARDS, and GAMING.

Waggon. See CART.

Wagtail. See WARBLER.

Wake-robin. See CUCKOW PINT.

Walking. See EXERCISE.

WALL CRESS, BASTARD TOWER-MUSTARD, or *Arabis*, a genus comprising twenty-one species, chiefly American and Alpine plants; the following are natives of our own country: the *Thaliana*, Common wall-cress, or Codded-mouse-ear, found on old walls; the *Stricta* on rocks and cliffs: and the *Turrita* in Cambridgeshire and the neighbouring counties.

Wall-flower. See STOCK.

Wall-pepper. See SEDUM.

WALNUT, or *Juglans*, a genus of plants comprising eight species, all American except one. The two following are most known in this country.

The *Alba*, or Hiccory, has leaflets seven, lanceolate-serrate; odd one sessile; a native of North America.

The *Regia*, Walnut, or French nut, has the leaflets about nine, oval or oblong, glabrous, slightly serrate, nearly equal, one petioled; a native of Persia. In its cultivated state in this country, it exhibits several varieties: as the larger, the thin-shelled, the French walnut, &c. They are all easily propagated by planting the nut; but the variety cannot be depended upon; and hence it is better to purchase them of the nurseryman when under fruit, that no disappointment may be experienced. The unripe fruit has been long used as a pickle, but we cannot recommend it. The kernel of the ripe nut is similar in quality to the filbert, and contains an oil which is occasionally expressed. The leaves, and also the covering of the nut, have an astringent bitterish taste, and are used in dyeing, see DYEING. The timber of this tree is much esteemed by coach makers, and also for making gun-stocks. See TIMBER.

The effluvia of walnut-trees are, it is

said, hurtful to the head; hence it is not advisable to sit underneath them; nor is it desirable to plant them too near dwelling houses; it is also asserted, that it is so injurious to strawberry beds that they seldom bear fruit in the neighbourhood of this tree. The walnut-tree requires little or no pruning.

Walrus. See MORSE.

WAR, a contest between two sovereigns, states, or large bodies of people; and as these are unwilling to submit the decision of their differences to arbitration or equity, they generally resort to arms for that purpose.

War is always a great evil, and it is doubtful whether it be even, for self defence, justifiable. Like duels between individuals, war may for a short time gratify the rage of hatred, but it uniformly fails to answer the end for which it was commenced; the understanding remaining still unconvinced. VIOLENCE, so far from contributing to such conviction, is the surest and readiest method of preventing it from approaching the mind. We are now in profound peace, and it behoves us to inculcate such lessons as will be most likely to prevent a recurrence of those scenes which have for so many years desolated and demoralized the great European Family. There is a society in London, which has been lately established, *for the promotion of permanent and universal peace*, which has printed and circulated a great number of tracts in furtherance of the benevolent object of its institution, and to which we cannot but wish every success.

When the *spirit* of christianity shall exert its proper influence over the minds of individuals, and especially over the minds of public men in their public capacities, war will no longer be heard of in civilized society. Whilst we are warriors, with all our pretensions to civilization, we are savages.

We understand that a society has also been established in the United States of America, similar to that in London; and we hope that its praiseworthy and highly benevolent object may be successful. Our own wishes and intentions are in complete unison with these societies.

We present our readers with a solemn picture from one of our living poets, relative to war, with which our article may most appropriately conclude. It is taken from a poem entitled the "*Soldier's Funeral.*"

> "From the ties of life
> Unnaturally rent, a man who knew
> No resting place, no dear delights of home,
> Belike who never saw his children's face,
> Whose children knew no father, he is gone,
> Dropt from existence, like the wither'd leaf
> That from the summer tree is swept away,
> Its loss unseen. She hears not of his death
> Who bore him, and already for her son
> Her tears of bitterness are shed: when first
> He had put on the livery of blood
> She wept him dead to her.—We are indeed
> Clay in the potter's hand! one favour'd mind
> Scarce lower than the angels shall explore
> The ways of nature, whilst his fellow-man
> Framed with like miracle the work of God
> Must, as the unreasonable beast, drag on
> A life of labour, like this soldier here,
> His wondrous faculties bestowed in vain,
> Be moulded by his fate till he becomes
> A mere machine of murder."
>
> SOUTHEY.

WARBLER, or *Motacilla*. a genus of birds comprehending one hundred and ninety-three species, scattered over the globe, a very great number of which are natives of Europe, and many of them of our own country; the following are the chief:

The *Luscina*, or Nightingale, is about six inches long from the tip of the bill to that of the tail; its colours are very plain, the head and back being of a pale tawny colour, dashed with olive; the throat, breast, and upper part of the belly of a light ash colour, the lower part of the belly almost white; the wings and tail are of a tawny red; builds a nest in low bushes, or quickset hedges, well covered with foliage, in the vicinity of brooks; it is externally composed of dry leaves, mixed with grass and fibres, and lined with hair or down; eggs four or five, olive green. It is common to Europe, Asia, and Africa: three varieties; one with the body entirely white: one of more than ordinary size It is said there are two sub-varieties of this species; one which sings only in the night, and another which sings more frequently during the day. This is, however, doubtful; for we believe that the same nightingale sings both by day and by night; of this, we confess that we have no adequate proof, but the *sameness* of their notes. Those naturalists have made an entire mistake, who asserted that the nightingale sings only in the evening and during the night; we have heard it in tranquil and remote woods, at every period of the day; but its song is, or seems, most harmonious in the night; at which time it may be often heard at a great distance, we think considerably more than a mile.

The nightingale is the most celebrated of all the feathered race for its song. It visits England, towards the latter end of April, and takes its departure in August. It is rarely found to migrate so far north as Scotland, or west as Cornwall, or Wales; its usual habitation in this country being about within one hundred and fifty miles in every direction from Dover. Its time of singing in its natural state, is only from about the time of its arrival till about Midsummer. It frequents coppices and woods; and although it can be approached very near, from its plumage not being striking, and its smallness, it is not easily recognised. This bird will, it is said, when tamed, sing nine months in the year. Their food in a domesticated state is spiders, wood-lice, ants' eggs, flies, and worms; they require to be kept in a warm place in winter, or they die.

The nightingale is found in the summer as far north as Sweden; but it is supposed that they return to the warmer climates in the autumn.

The *Rubecola*, Red-breast, Robin, or Robin-red-breast, is too well known to need description. Three varieties, the common grey, with throat and breast ferruginous; a second entirely white; the third with chin white, wing coverts and feathers variegated. It is remarkable that this bird, which remains even in North Britain all the year round, as well as generally throughout England, should migrate from France, during the winter months. It appears in this country to be particularly fond, during the winter season, of the habitations of man; its note is well known, and its society always agreeable. It builds in dry banks beneath tufts of grass; eggs five, dusky white, with reddish spots. Found over the whole of Europe, from Norway and Sweden to the Mediterranean.

The *Phœnicurus*, or Red-start, has the head, the hind part of the neck, and the back, of a deep shining grey; it has also a large black patch upon the forepart of the neck; the wings are of a dusky black, and the breast, under the patch of black just noticed, shines with a fine igneous red, growing more and more faint towards the flanks and belly, which are of a white colour: three varieties. It is less than the red breast, but longer and more slender. It makes its appearance in the spring, along with the other summer birds. It frequents old towers and uninhabited houses; and is found also in the most impenetrable woods, where it indulges undisturbed its solitary habits, and utters its plaintive notes. Builds in old walls or rotten trees; eggs five or six.

The *Troglodytes*, or Wren, has the whole plumage transversely barred with undulating lines of brown and black; on the belly and lower parts it inclines to grey. It is small, indeed one of the smallest of our native birds, being about three inches and a half in length; inhabits England and Europe at large; found also in Asia: it remains in this country throughout every season. Builds a curious nest, generally with moss and dried leaves, beneath the branch of some ivied tree, with a small hole on one side, just sufficient to admit the body of the bird to enter it; lays from six to eight, or more, whitish eggs, with rusty spots.

The *Sutoria*, Tailor bird, or Tailor wren, is a very small yellow bird, about three inches long, and weighs only about three-sixteenths of an ounce. Inhabits India, and constructs a very curious nest, by sewing the edges of one or more leaves together, so as to form a conical repository for its eggs and young, which it lines afterwards with feathers and vegetable down; this singular work is performed by using the bill instead of a needle, and by employing vegetable fibres for thread. Eggs white; not much larger than what are called ants' eggs.

The *Oenanthe*, or Wheat-ear, is distinguished by its hoary back; its front line above the eyes, rump, and base of the tail, white: through the eyes a black band. The distribution of these colours varies, however, so as to produce four or five varieties. Found as far north as Greenland, and as far east as India. It visits England annually in the beginning of March, and leaves us in September. Chiefly frequents heaths and warrens; grows prodigiously fat; breeds in rabbits' burrows, and under stones; eggs from five to eight, light blue, with a deep blue circle at the large end; they are caught in some parts of England in large numbers; the larger are sent to London; when potted by the poulterers, are as much esteemed as the ortolan on the Continent.

The *Cyanea*, or Superb warbler, is one of the most beautiful of the whole genus; five and a half inches long; back blue, beneath white: feathers of the head long, lax, turgid; front cheeks and lunula on the neck, fine blue. One other variety. Female brown above, beneath white; blue round the eyes; inhabits New Holland; the second variety Manilla.

The *Modularis*, Hedge warbler, or Hedge sparrow, is brownish with blackish streaks; size of the red breast; builds in low bushes and dry brakes; eggs five, light blue. Common to Europe. The cuckoo generally lays her eggs in the nest of this bird. (See CUCKOO.) We found, some years since, a cuckoo in the nest of a hedge-sparrow, which we took and placed in a cage; the hedge sparrow fed the young cuckow in the cage for three weeks afterwards, and then deserted it. We afterwards fed it ourselves with earthworms; but it died in the course of the autumn, we believe simply from cold. It appeared to us unwilling to feed, or incapable of feeding itself, although we kept it till it was a full-grown bird: it devoured earthworms most rapaciously.

The *Alba*, or White wagtail, inhabits England and Europe generally; three varieties, from variety of colour. The tribe wagtail includes twenty or more of the species of this genus, distinguished into pied, cinereous, green, water wagtails, &c.; or into Indian, African, &c. from their native habitations.

The *Sylvia*, or White throat, inhabits England, and Europe generally: two varieties, from variety of colour. The *nævia*, or Fig-eater, inhabits Italy; feeds on figs and grapes, whence its specific name. The *rubetra*, or Whinchat, inhabits England, Europe, Asia, and Africa. The tribe of whin-chats comprise three or four varieties. The *hortensis*, or Petty-chaps, inhabits France and Italy. The *sylvatica*, or Wood-wren, inhabits our own country. The *rubicola*, Stone-chat, or Moor-titling, inhabits England, Europe, and Siberia. The *atricapilla*, or Black-cap, inhabits England and Europe generally; four varieties. The *atrata*, or Black red-tail: the red-tail comprises four species, one of which inhabits Europe, the others South America. The *magna*, or Dark warbler, is the last we can mention. The tribe of warblers, peculiarly so called, are common to tropical and other warm climates, and comprise not less than a hundred varieties of the present genus: not one of them is found native in our own country.

WARBLES, in farriery, small hard, but inflamed swellings in a horse's back, caused by the pressure or heat of the saddle. They should be frequently bathed with vinegar, or with a solution of sugar of lead in vinegar, or crude sal ammoniac dissolved in vinegar. When much inflammation is present, these applications require to be diluted.

Warmth. See COLD, DRESS, FIRE-PLACE, FLANNEL, HEAT, STEAM, &c.

Warranty of a horse. See **SOUNDNESS.**

WARTS, are small, hard, indolent tumours, appearing on different parts of the body, chiefly the hands and face. If they are not troublesome, they should not be touched, as they generally fall off, or waste gradually away. When they require being removed, if they are pendulous with narrow necks, a ligature of silk offers an effectual remedy ; or if their bases be broad, escharotics, as sulphate of copper, may be applied to them ; or, which is better, crude sal ammoniac ; this should be first moistened with water, and then well rubbed over the wart two or three times a day. The most effectual remedy is said to be tincture of muriate of iron (see iron) applied daily. We have known the juice of elder berries remove them. See ELDER.

WARTS in HORSES, are best cured by cutting them away, taking care, of course, in doing so, to injure the surrounding parts as little as possible.

WART-WORT, SUN-SPURGE, or **CAT'S MILK,** a species of spurge, or *Euphorbia helioscopia,* an indigenous plant, flowering in July and August, but is of no importance.

WARTED-SNAKE, or *Acrocordus,* a genus of serpents consisting of one species, the *Javanicus,* characterized by having its body covered with warty tubercles ; it is a native of Java, and of a brown colour, pale beneath ; the sides are obscurely variegated with a whitish hue ; head somewhat flattened, hardly wider than the neck ; body gradually thicker towards the middle, and suddenly contracting near the tail ; sometimes seven feet long ; found chiefly in pepper plantations.

Wash-balls. See SOAP.

Washing. See BATHING, CLEANLINESS, DYEING, SCOURING, STEAM, &c.

WASHING MACHINE, a machine invented for washing linen. A description of an apparatus of this kind may be seen in the *Pantologia,* but, except for very large establishments, we believe it is scarcely used in domestic economy. That steam, and the heating of water by steam, for the purpose of washing, may be made more extensively useful, and that such processes are more economical, we cannot permit ourselves to doubt. See BOILER and STEAM.

WASP, or *Vespa,* a genus of hymenopterous insects, having a horny mouth and a compressed jaw ; feelers four, equal filiform ; antennas filiform, the first joint longer and cylindrical ; eyes lunar ; body glabrous ; upper wings folded in each sex ; sting of the female pungent, concealed in the abdomen ; male stingless. Two hundred and twelve species are scattered over the globe ; eight common to our own country. They are thus subdivided ;—tongue simple or tongueless,—tongue bifid, retractile,—tongue inflected, five cleft. The following are all we can enumerate.

The *Crabro,* or Hornet, has the thorax black, the fore-part rufous, immaculate ; incisures of the abdomen with a double contiguous black dot ; it is considerably larger in size than the common wasp ; but on a slight inspection, very similar in appearance and colour ; inhabits Europe, and makes its nest in the trunks of hollow trees ; the sting of this animal is extremely painful. The hornet is not found in Scotland, though common in England.

The *Vulgaris,* or Common wasp, has the thorax black, surrounded on the anterior part by a yellow line ; abdomen golden yellow, with triangular spots down the back part, and black ones on each side.

The wasp, in general, seems to fill up a middle rank between the ichneumons and the bees ; like the former they are rapacious and carnivorous, and, like the latter, they construct nests, and sometimes feed on the produce of flowers. They are at once the rivals and the enemies of the common bee, many of which perish by their attacks while they make a prey of their honey.

Wasps very commonly make their nests under ground, in a dry bank ; and at certain seasons of the year, some of these nests contain many thousand inhabitants ; some naturalists inform us that it is constructed of *combs*, with nearly the same ingenuity and elegance as the honey bee. This is, according to our experience, erroneous; it contains evelopes or cells for the larvæ, but nothing that we have ever seen like the comb of the bee. In fact, we had one time an opportunity of witnessing a wasp's nest in a empty bee-hive. It was of a globular form, about five or six inches in diameter, and suspended from the top of the hive. It appeared to consist of many folds and involutions of a thin substance, somewhat like dirty whitish paper; but was, in no respect, similar to the comb of the bee; the whole nest made up one entire body, without any apparent separation into combs, and was full of live larvæ. There was not the least appearance either of wax or honey. And from the habits of the wasp we should conclude, that it lives not by laying in stores of its own, but by depredations on those of the bee, &c.

It is said that when provisions begin to grow scarce in the autumn, the wasps fight and destroy one another; and that only a few escape to produce new colonies in the next year. There is every probability that the females of the wasp tribe are liable to similar developement with the bee. See BEE.

For the treatment of persons stung by wasps or hornets, see BEE-STING, and POISON.

WASP, the TAILED, or *Sirex*, a genus of hymenopterous insects consisting of twenty-six species, of which six are common to our own country; they live on the nectar of flowers. The *Gigas*, is the largest of these; but the male is a third less than the female. The female only has a sting. The wings of this species are large, yellow, and veined; the thighs short and black; legs and tarsi yellow; antennas the same colour; head black, belly cylindrical, consisting of nine different segments, some of a black, others of a yellow colour.

Watchfulness. See BED-TIME, INCUBUS, SLEEP, and SOMNAMBULISM.

WATER, or *Aqua*, is a compound body, consisting of hydrogen and oxygen. When two volumes of hydrogen gas are mixed with one volume of oxygen gas, and the mixture inflamed in a proper apparatus, by the electric spark, the gases totally disappear, and the interior of the vessel is covered with drops of pure water, equal in weight to that of the gases consumed. And if pure water be exposed to the action of galvanic electricity, it is resolved into two volumes of hydrogen, disengaged at the negative pole, and one volume of oxygen disengaged at the positive pole; so that water is thus proved both by synthesis and analysis, to consist of two volumes of hydrogen combined with one volume of oxygen. The specific gravity of hydrogen compared with oxygen, is as 1 to 15; therefore the component parts of water by weight, are 1 hydrogen; 7,5 oxygen.

Pure water is transparent, and without either colour, taste, or smell. In consequence of the facility of obtaining it pure, it is assumed as a standard, to which the relative weights of all other bodies may be compared, its specific gravity being called 1000. At the temperature of 40°, it is at its greatest density; and at that temperature, an English cubic foot weighs 437102,4946 grains, or 999,0914161 ounces avoirdupois, or 1000 ounces nearly; a cubic inch 252,953 grains.

A pint of pure water, wine measure, weighs, or is assumed to weigh, sixteen ounces avoirdupois.

At the temperature of 32°, water congeals into ice, which, if slowly formed, produces needles crossing each other at angles of 60° and 120°. The specific gravity of ice is 0,94; ice of course always floats on water. If water be exposed to heat in open vessels, it boils, or is converted into steam at 212°. the barometer being at thirty inches; but the boiling of water varies considerably with the pressure. When the barometer is at 28 inches, it will boil at a lower temperature than when at 31. At the top of Mont Blanc, it boiled, according to Saussure, at 187°, so that the heights of mountains, and even of buildings, may be calculated by reference to the temperature at which water boils upon their summits. In the vacuum of an air pump water boils at a temperature considerably below its ordinary boiling point.

The specific gravity of air being considered as 1, that of steam is 0,6235. At mean pressure, and at the temperature of 212°, the bulk of steam is 1700 times greater than that of water; hence the great power and advantages of steam. See STEAM.

Water which has been exposed to the atmosphere, always contains a portion of air, as may be proved by boiling it, or by exposing it under the exhausted receiver of an air pump. To separate the air, the water must be boiled for about two hours. It absorbs oxygen gas in preference to atmospheric air.

Although it is usually considered necessary that water should be heated to the boiling point 212°, to be converted into steam, for mechanical and other purposes more especially, yet water is continually converted into vapour, either visible or invisible, at almost every temperature above the freezing point, depending upon the state and temperature of the atmosphere; and it it well known that, in the driest weather, atmospheric air has always a considerable portion of water mixed with it: this is proved by exposing dry subcarbonate of potash to its influence, when, in a very short time, it becomes moist.

Water has a considerable effect upon some of the metals. Those metals which are speedily acted upon by common air and oxygen, are also generally susceptible of decomposing water; some of them rapidly, others slowly. There are some metals which are not acted upon by air deprived of moisture, nor by water deprived of air; but moist air, or water containing air, effect their oxidizement; this appears to be the case with iron: hence the ease with which it rusts in a moist atmosphere.

Water combines with some of the metallic oxides, and produces hydrated oxides, or *metallic hydrates*. In these, the relative proportion of water is definite. The term *hydrate* has been lately introduced into chemical language, and implies a composition of which water forms a constituent part; it is most commonly, however, applied to the union of water with the metallic oxides. See LIME.

Water is capable of dissolving a greater number of natural bodies than any other fluid whatever, and especially those known by the name of saline. It also performs the most important functions in the vegetable and animal kingdoms, and enters largely into their compositions as a constituent part.

Water is found throughout the earth not only in the uncombined states of ice, liquidity, and steam, but permanently united to a vast number of bodies, both solid, fluid, and gaseous; the common air of the atmosphere and water are mutually miscible, or soluble, in each other; all natural waters contain air; and, as we have mentioned above, even the driest air holds a portion of water in solution. Again, many solid minerals, and all crystallized neutral salts, contain water in their composition; of some of the latter it constitutes one half their weight; and by all these combinations water in changing its form loses many of its distiguishing properties.

On the more common and necessary uses of water we need not enlarge; but water when freed from vegetable matter or other substances, which are disposed to decomposition, is, beyond a doubt, next to atmospheric air, the most valuable pabulum for the support of the human body, and for preserving it in good health, it entering largely into the composition of our fluids, and promoting the due action of all our functions. It is equally important to vegetable life: without the continual presence and aid of water, the earth would cease to be fruitful, and most of the vegetable creation must perish.

Native water is seldom if ever found perfectly pure. The waters which flow within or upon the surface of the earth, contain various earthy, saline, metallic, vegetable, or animal particles, according to the substances over, or through which they pass. Rain and snow waters are much purer than these, although they also contain whatever floats in the air, or has been exhaled along with the watery vapours. See MINERAL-WATERS.

The purity of water may be known by the following marks or properties of pure water. Pure water is lighter than water that is not pure; pure water is more fluid than water that is not pure; it has no colour, smell, or taste; it wets more easily than the waters containing earthy and metallic salts, called *hard* waters, and feels softer when touched; soap, or a solution of soap in alcohol, mixes easily and perfectly with it: it is not rendered turbid by adding to it a solution of gold, in aqua regia, or a solution of silver, or of lead, or of mercury, in nitric acid, or a solution of acetate of lead in water.

A variety of bodies are to be found in most spring water; but that which is most common is carbonate of lime; and which attaches itself in abundance to the sides of tea-kettles, and is commonly denominated *rock*. It has been supposed that when the water which is drunk contains an abundance of this substance, it is more likely to produce the stone or gravel, but the most modern inquiries on this subject do not countenance the opinion. See STONE.

The purest water, and of course, that which is the softest, is unquestionably the best, and ought to be preferred. But soft water, with much vegetable or animal matter in a state of decomposition, is much less wholesome than hard spring water. Next to pure rain water, when to be obtained, the water of a rivulet which is in continual motion, is perhaps the best.

As a constant beverage with our food, water is unquestionably to be preferred to any other liquid; nor have any cases been recorded in which the daily use of this fluid has been productive of detrimental effects. See DRINK.

Pure water will keep for ages unaltered. It was, till modern chemistry demonstrated the contrary, supposed to be a simple body.

Distilled water is ordered by the London College to be obtained thus. Take of water ten gallons. First distil four pints, which are to be thrown away, then distil four gallons and keep it in a glass bottle.

By distillation, the water is freed from various saline ingredients, and rendered nearly pure. The process should be conducted slowly, with a moderate degree of heat, and not continued longer than above directed, otherwise a minute portion of the saline matter contained in the natural water, passes over in the distillation.

In the preparation of some medicines, distilled water is absolutely necessary; it may be useful to know, that all medicines containing any of the following ingredients, ought to be mixed with distilled water; *citric acid, tartarized antimony, nitrate of silver, corrosive sublimate, solution of ammonia, solution of subacetate of lead, solution of potash, solution of muriate of barytes, wine of iron, sulphate of zinc.*

For the distillation of water, see DISTILLATION. For filtering water. See FILTRATION.

For the tests necessary to detect various substances in water. See MINERAL WATERS.

We cannot conclude this article without entering our protest against the too common practice in this metropolis of conveying water by leaden pipes, and keeping it in leaden cisterns. Whatever may be the conveniences attendant on this mode of conveying and retaining so important a fluid, a consideration of the ease with which lead becomes oxidated, and in that state, more or less poisonous, ought to prompt those who have more immediate influence in such affairs, to discard the use of lead altogether. See LEAD.

One of the most delicate tests for detecting lead, is water impregnated with sulphuretted hydrogen gas, which instantly imparts to the fluid containing the minutest quantity of lead, a brown, or black tinge.

Water in the head. See DROPSY OF THE BRAIN.

Water brash. See HEART-BURN and DYSPEPSIA.

WATER-CALTROP, or *Trapa natans,* a species of the genus TRAPA, of which there are two, the *Natans* and the *Bicornis.* The water caltrop is an aquatic plant having a nut with four horns. It was formerly in the materia medica, but is now unheard of. It is a native of Europe and Asia. The other species has the nuts two horned; it is a native of China, and also an aquatic plant.

WATER-CLOSET, a useful contrivance, the purpose of which requires no explanation.

Various patents have been obtained for improvements in the constructions of these conveniences, amongst which ROWNTREE'S and BINNS'S may be mentioned, the last of which has been highly spoken of, but we cannot describe it; a minute description of it, with a plate, will be found in the *Pantologia,* under CLOSET.

In the construction of all such useful appendages to a dwelling house, care should be taken that a constant, or at least, an occasional stream of water should pass through the pipe or tube, in order that all offensive matter may be conveyed away; nor is it of trifling moment that a complete circulation of air should also be obtained. See CLOSE-STOOL.

Water-colour. See COLOUR-MAKING.

Water-cress. See CRESS.

Water-dock. See DOCK,

Water-elder. See GUELDER ROSE.

Water-flag. See IRIS.

Water-germander. See GERMANDER.

Water-gruel. See OATS, and SUPPER.

Water - gladiole. See CARDINAL FLOWER.

Water-lily. See LILY.

Water-melon. See GOURD.

Water-ouzel. See STARE.

Water-parsnip. See PARSNIP THE WATER.

Water - plantain. See PLANTAIN THE WATER.

WATER-SOLDIER, or *Stratiotes,* a genus of plants consisting of three species, two natives of the East Indies, one the *aloides,* indigenous to the ditches of our own country; the leaves are ensiform, triangular, with prickly serratures; flowers white, floating on the water, and blossoming in June.

WATER-SCORPION, or *Nepa,* a genus of hemipterous insects consisting of fourteen species, which are thus subdivided:—antennas palmate, lipless,—antennas palmate; lip very short: widely emarginate,—lip projecting, rounded. They are all water insects; two of them the *Cinerea,* and *Linearis,* common to our own country. When arrived at their full size, they are sometimes an inch in length, and nearly half as broad. This genus is of all animals the most tyrannical; destroying twenty times as many worms as their hunger requires. The cinereous water scorpion, is the most common of the tribe.

Water-trefoil. See BUCKBEAN.

Watering pot, a testaceous worm. See SERPULA.

Watering of Land. See IRRIGATION.

WATTLE-BIRD, or *Glaucopis,* a genus consisting of one species only, the *Cinerea,* or Cinereous wattle-bird, having an incurvate arched bill; feet ambulatory; fifteen inches long; walks on the ground, seldom perches on trees; feeds on berries, insects, and small birds; makes a hissing and murmuring noise; flesh good; inhabits New Zealand.

Wax. See BEES' WAX.

Wax-myrtle. See CANDLE BERRY MYRTLE.

Wax, sealing. See SEALING-WAX.

Wayfaring Tree. See GUELDER ROSE.

Weaning of Infants. See INFANCY.

——— *Calves.* See CALF and COW.

——— *Colts.* See HORSE.

Weasel. See OTTER, and VIVERRA.

WEATHER, a term denoting the state of the atmosphere, with respect to heat, cold, hail, rain, snow, &c.

No certain rules have been yet laid down by which the weather may be predicted. The best which we have seen are those published by Mr. Kirwan, in the Transactions of the Irish Academy, Vol. V. They are the result of careful observations made in England, during a period of 112 years; (i. e.) from 1677, to 1789.

When no storm has either preceded or followed the vernal equinox, the succeeding summer is in general dry; or at least so five times out of six.

If a storm happen from an easterly point on the 19th, 20th or 21st day of May, the ensuing summer will four times in five, be also dry. The same event generally takes place if a storm arise on the 25th, 26th, or 27th of March, in any point of the compass.

Should there be a storm either at south-west, or at west-south-west, on the 19th, 20th, 21st, or 22nd of March, the following summer is wet, five times out of six.

In England, if the winters and springs be dry, they are mostly cold; but if moist, they are generally warm; on the contrary, dry summers and autumns are usually hot; as moist summers are cold. Thus, if the humidity or dryness of a particular season be determined, a tolerably correct idea may be formed respecting its temperature. To these indications may be added the following maxims, the result of observations made by accurate inquirers.

A moist autumn, succeeded by a mild winter, is generally followed by a dry and cold spring.

Should the summer be uncommonly wet, the succeeding winter will be severe. Wet summers are mostly attended with an increased quantity of fruit on the white-thorn and dog-rose: the uncommon fruitfulness of these shrubs has been considered a presage of an intensely cold winter. This, however, we do not think by any means correct.

A severe winter is always indicated by the appearance of cranes, and other birds of passage, early in autumn.

If frequent showers fall in the month of September, it seldom rains in May; and the reverse.

When the wind often blows from the south-west during either summer or autumn; when the air is unusually cold for those seasons, both to our sensations and by the thermometer; at the same time the mercury being low in the barometer; under these conditions, a profuse fall of rain may be expected.

Great storms, rains, or other violent commotions of the clouds, produce a kind of crisis in the atmosphere; so that they are attended with a regular succession either of fine or of bad weather, for some months.

Lastly, an unproductive year mostly succeeds a rainy winter; as a rough and cold autumn prognosticates a severe winter. See BAROMETER and CLIMATE.

Weather-glass. See BAROMETER.

Weaving. See LOOM.

WEDGE, in mechanics, one of the five mechanical powers, or simple engines; being a geometrical wedge, or very acute triangular prism, applied to the splitting of wood, or rocks, or raising great weights. To the wedge may be referred all edge-tools, and tools which have a sharp point, in order to cut, cleave, split, chop, pierce, bore, or the like; as knives, hatchets, swords, bodkins, &c. The most common wedge is, however, made of iron, or some other hard matter, and is used by having its thin edge introduced first, and afterwards driven in, by blows struck upon the head of it by hammers or mallets. It is the most powerful of all the simple machines.

WEEDS, in agriculture, are commonly divided into three classes: *annuals*, *biennials*, and *perennials*. In a list given by an intelligent author, of weeds which infest our corn-fields, fifty-five are enumerated. Fortunately their extirpation can be accomplished in general, by nearly the same means.

The most effectual means of destroying annual and biennial weeds on strong land, is by a clean and thorough summer fallow; or, on light soils, by the culture of turnips, potatoes, or tares, in rows, and kept perfectly clean; but for the attainment of this object it is necessary to bring the seeds within the limits of vegetation; and to destroy every weed which vegetates.

Perennial weeds are by far the most

difficult to be eradicated, as several of them are propagated both by the seeds and roots. Under this head are comprehended all the weeds to which the common name of *couch* is given, one of the greatest banes with which husbandry has to contend. Couch is sometimes so interwoven in the soil, where the land has been long in neglected tillage, as to form a perfect matting. Its destruction can only be effected by an early and complete summer fallow, when by repeated ploughings, with sufficient harrowings between each ploughing, the roots may be worked out, and brought to the surface. The scarifier, or grubber, is also of peculiar service, in extracting the couch after it has been completely pulverized. When collected, the roots should either be burnt, or deposited in a large heap, and mixed with lime, and thus may become an excellent compost.

It is proper to observe, that the destruction of root-weeds, as couch, and seedlings, as charlock, must be effected in arable land, upon different principles; the former by working them out of the soil in dry weather only; the latter by pulverizing the soil, so as to induce the seed to germinate after rain, and afterwards ploughing in the young plants.

Among the weeds affecting arable lands, thistles, docks, wild oats, and coltsfoot, require particular attention. See THISTLE, DOCK, and COLTSFOOT.

Above twenty kinds of weeds infest grass lands; some of the most worthless, as the rush and the sedge tribe, may be got the better of by draining; others, like the mosses, either by cultivation or manure; but there are a few which require individual attention, before they can be eradicated, particularly the dock, the thistle, and the rag-weed. The only effectual method of destroying the last, is to pull it up just before the flower expands, which may be most easily done after a plentiful shower.

WEEVER, or *Trachinus*, a genus of fishes consisting of one species only, the *draco*, Common weever, or Sting-bull, which is of a long and compressed figure, marked upon the sides with a number of cinereous lines, which arise from the middle of the back, and proceed towards the belly; apertures of the gills uncommonly large, and each of the covers furnished with a strong sharp spine; dorsal fins armed with sharp prickly rays; found on our own coasts, and inhabits most European seas; seldom grows to twelve inches long; buries itself in the sand, and leaves only its nose out; if trodden on, strikes with great force; the wounds inflicted by the spines of the first dorsal fin, produce an immediate, and often dangerous inflammation, extending all up the arm and shoulder; feeds on shell fish, crabs, &c. flesh very good.

WEEVIL, or *Curculio*, a genus of coleopterous insects, with clavate antennas, seated on the snout, which is horny and prominent; feelers four, filiform. The larvæ of this most splendid tribe have six scaly legs, and a scaly head; some of them infest granaries, eating their way into the grains of corn, leaving nothing but the husk; some dwell in other seeds, or are lodged in the inside of artichokes, thistles, and various other plants; and others devour the leaves of trees and herbs. Six hundred and fifty-three species have been described. They are scattered over the globe, and may be thus subdivided:— jaw cylindrical, one-toothed, —lip bifid, jaw bifid, short: snout short, —lip rounded, horny; feelers very short. The following are the chief:

The *Nucum*, or Nut weevil, has a brown body, about half an inch long; the complete insect is the parent of the maggot, so frequently found in the hazel nut; it appears early in August, and is seen creeping about hazel trees. The female pierces the nut with her proboscis, and deposits an egg in the cavity. The nut, not essentially injured, continues to grow. The egg is soon hatched, and the young maggot continuing to feed on the kernel of the nut, about the time of its full growth, falls with the nut to the ground, and at length creeps out, by gnawing a circular hole in the side. It then burrows, or creeps under the surface of the ground, where it continues dormant for eight months; it then casts its skin, commences a chrysalis, of the shape and appearance of the beetle tribe, and in the beginning of August attains its complete form, creeps to the surface, and becomes an inhabitant of the upper world.

The *Granarius*, Corn-chafer, or Granary weevil, is of a chesnut, or reddish brown colour; length scarcely two lines. It deposits an egg in wheat or barley, and undergoes the same process of transmigration as the preceding, but in a much shorter period; the perfect insect being completed in about twenty-one days. The egg is about the size of a grain of sand.

The *Imperialis*, Imperial weevil, or Diamond beetle, has the ground colour of the wing-sheaths coal-back, with numerous parallel rows of sparkling indentations, round and of a green-gold colour, highly brilliant, from minute reflecting scales, like scales of the butterfly: it is the most brilliant and beautiful of the insect class; a native of Brazil.

Several nostrums have been published for the destruction of the granary weevil, but we believe they are all ineffectual. Frequent screening and shifting of the grain, particularly in dry weather, appear to be the best preventives of the ravages of these destructive insects. But as it is now well-known that corn keeps better in the straw, than when threshed, it is, of course, most advisable not to keep threshed grain in large quantities together, nor for a long period before it is used. See GRANARY.

WEIGH, or WEY, a term for a weight used occasionally in this country. It is employed for cheese, wool, &c., and contains 256lbs. avoirdupois. A weigh of corn should be forty bushels; of barley or malt, six quarters; in Essex and some other counties, a weigh of cheese is 300lbs. See the next article.

WEIGHTS AND MEASURES. Commercial transactions requiring correct and uniform weights and measures, which are usually made of lead, iron, brass, or some compound metal, most nations have taken care to prevent the falsification of them, by stamping or marking them by proper officers, after being adjusted by some original standard. Thus in England, the standard of weight is kept in the Exchequer, by a particular officer, called the Clerk of the Market. The Scottish standards are distributed among the oldest boroughs. The elward is kept at Edinburgh, the pint at Stirling, the pound at Lanark, and the firlot at Linlithgow.

The two principal weights established in Great Britain, are troy weight and avoirdupois weight. Under the head of the former it may be added, that a *carat* is a weight of four grains; but when the term is applied to gold it denotes the degree of fineness. Besides the carat, grain, and pennyweight, moneyers and jewellers have also a peculiar subdivision of the troy grain thus:

The grain into 20 mites,
The mite into 24 droits,
The droit into 20 periots,
The periot into 24 blanks.

Notwithstanding various laws have been enacted for the regulation of weights and measures in this country, none have been made which embraces the whole regulation of these important subjects. A commission is, we understand, sitting at the present moment, upon whose report, when made, some extensive legislative enactment will, most probably, be founded; and which, it must be confessed, is in this country greatly wanted. The differences, too, between the weights and measures of this and other countries are greatly to be deplored. It is not within our limits to note these differences.

We have under the heads of Acre, Ounce, Pound, Ell, Yard, Avoirdupois, Troy Weight, &c., given an account of the various weights and measures in use in this country: but it may be useful to lay the following tables at one view before our readers. For further information on the subject of weights and measures, reference must be had to the several articles in the order of the alphabet.

WEIGHTS AND MEASURES

The chief English Weights and Measures, with their contents in French Grammes and Litres.

Apothecaries Weight.

Pound.		Ounces.		Drachms.		Scruples.		Grains.		Grammes.
1	equal to	12	equal to	96	equal to	288	equal to	5760	equal to	372,96
		1	—	8	—	24	—	480	—	31,08
				1	—	3	—	60	—	3,885
						1	—	20	—	1,295
								1	—	0,06475

Troy weight is similar to the above in the pounds and ounces ; but the ounce is divided into 20 pennyweights, and the pennyweight into 24 grains.

Avoirdupois Weight.

Pound.		Ounces.		Drachms.		Grains.		Grammes.
1	equal to	16	equal to	256	equal to	7000	equal to	453,25
		1	—	16	—	437,5	—	28,328
				1	—	27,34375		1,7705

Wine Measure.

Gallon.		Pints.		Ounces.		Drachms.		Cubic Inches.		Litres.
1	equal to	8	equal to	128	equal to	1024	equal to	231	equal to	3,78515
		1	—	16	—	128	—	28,875	—	0,47398
				1	—	8	—	1,8047	—	0,02957
						1	—	0,2256	—	0,00396

The wine gallon contains 58176 troy grains; the wine pint 7272 troy grains. The quart wine measure is omitted in this table, but is, of course two pints.

The chief French weights and measures, with their value in English weights and measures.

Measures of Length.

		English Inches.		English. Miles.	Fur:	Yds.	Ft.	Inches.
Millimetre	equal to	,03937						
Centimetre	—	,39371						
Decimetre	—	3,93710						
Metre	—	39,37100						
Decametre	—	393,71000	equal to	0	0	10	2	9,7
Hecatometre	—	3937,10000	—	0	0	109	1	1
Kilometre	—	39371,00000	—	0	4	213	1	10,2
Myriometre	—	393710,00000	—	6	1	156	0	6

Measures of Capacity.

		Cubic Inches.		English. Tons.	Hhds.	Wine G.	Pints.
Millilitre	equal to	,06103					
Centilitre	—	,61028					
Decilitre	—	6,10280					
Litre	—	61,02800	equal to	0	0	0	2,1 38
Decalitre	—	610,28000	—	0	0	2	5,1 1 52
Hecatolitre	—	6102,80000	—	0	0	26,419	3
Kilolitre	—	61028,00000	—	1	0	12,19	
Myriolitre	—	610280,00000	—	10	1	58,9	

Measures of Weight.

		English Grains.		Avoirdupois. Pounds	Ounces	Drachms
Milligramme	equal to	,0154				
Centigramme	—	,1544				
Decigramme	—	1,5444				
Gramme	—	15,4440				
Decagramme	—	154,4402	equal to	0	0	5,65
Hectogramme	—	1544,4023	—	0	3	8,5
Kilogramme	—	15444,0234	—	2	3	5
Myriogramme	—	154440,2344	—	22	1	2

Besides the above English weights and measures, we have many others employed on various occasions and for different commodities. For practical purposes, the following tables of most of our weights and measures will be found useful.

WEIGHTS AND MEASURES

Troy Weight.

A Pound	equal to	12	Ounces
1 Ounce	—	20	Pennyweights
1 Pennyweight		24	Grains

By this weight gold, silver, and jewels are weighed.

Apothecaries Weight.

20	Grains	equal to	1	Scruple
3	Scruples	—	1	Drachm
8	Drachms	—	1	Ounce
12	Ounces	—	1	Pound

By this weight all medicines are compounded.

Avoirdupois Weight.

16	Drachms	equal to	1	Ounce
16	Ounces	—	1	Pound
112	Pounds	—	1	Hundred weight
20	Hundred wt.	—	1	One ton

By this weight we weigh groceries, common metals, wool, tallow, bread, &c. &c.

Comparison between Troy and Avoirdupois.

175	lbs. Troy	make	144	Avoir. lbs.
175	oz. Troy	—	192	Avoir. ozs.
1	lb. Troy	—	5760	Grains
1	lb. Avoir.	—	7000	Grains
1	oz. Avoir.	—	437½	Grains
1	oz. Troy	—	480	Grains

The avoirdupois ounce is nearly 1-12th less than the troy ounce

Wool Weight

is the avoirdupois pound, but with different divisions.

7	Pounds	equal to	1	Clove
2	Cloves	—	1	Stone
2	Stones	—	1	Tod
6½	Tods	—	1	Wey
2	Weys	—	1	Sack
12	Sacks	—	1	Last

Ale and Beer Measures.

2	Pints	equal to	1	Quart
4	Quarts	—	1	Gallon
8	Gallons of Ale	—	1	Firkin
32	Ditto.	—	1	Barrel
1½	Barrel, or 48 gal.	—	1	Hogshead
9	Gallons of beer	—	1	Firkin
2	Firkins of ditto.	—	1	Kilderkin
2	Kilderkins	—	1	Barrel
1½	Barrel	—	1	Hogshead
2	Hogsheads	—	1	Butt
2	Butts	—	1	Tun

The pint of this measure contains of cubic inches 35,25

A Quart is equal to 70,5

A Gallon — 282

1 Hogshead — 8,812 of cubic feet.

Wine Measure.

4	Gills	equal to	1	Pint
2	Pints	—	1	Quart
4	Quarts	—	1	Gallon
10	Gallons	—	1	Anker
18	Gallons*	—	1	Rundlet
42	Gallons	—	1	Tierce
2	Tierces	—	1	Puncheon
63	Gallons	—	1	Hogshead
2	Hogsheads	—	1	Pipe or Butt
2	Pipes, or 4 Hhds.	—	1	Tun.

A Hhd. of this measure, in cubic feet, is 8,421.

A Gallon, as above, is 231 cubic inches.

Dry Measure.

4	Gills	equal to	1	Pint
2	Pints	—	1	Quart
4	Quarts	—	1	Gallon
2	Gallons	—	1	Peck
4	Pecks	—	1	Bushel
2	Bushels	—	1	Strike
4	Bushels	—	1	Coomb
2	Coombs, or 8 Bush.	—	1	Quarter
5	Quarters	—	1	Wey or load
2	Weys	—	1	Last.

Contents in cubic inches.

1	pint	equal to	33,6
1	gallon	—	268,8
1	bushel	—	2150,42

Coal Measure.

4	Pecks	equal to	1	Bushel
3	Bushels	—	1	Sack
12	Sacks	—	1	Chaldron
21	Chaldrons	—	1	Score

Long Measure.

3	Barley corns	equal to	1	Inch
3	Inches	—	1	Palm
4	ditto	—	1	Hand
12	ditto	—	1	Foot
3	Feet	—	1	Yard
6	ditto	—	1	Fathom
20	ditto	—	1	Rope
5½	Yards	—	1	Pole, perch, or rod
40	Poles	—	1	Furlong
8	Furlongs	—	1	Mile
3	Miles	—	1	League

Cloth Measure.

2¼	Inches	equal to	1	Nail
4	Nails	—	0¼	of a Yard
3	Quarters	—	1	Ell Flemish
4	Quarters	—	1	Yard
5	Quarters	—	1	Ell English
6	Quarters	—	1	Ell French

Square, or Superficial Measure.

144	Square Inches	equal to	1	Square foot
9	Square Feet	—	1	Square yard
30¼	Square Yards	—	1	Square pole, or Rod
40	Square Poles	—	1	Rood
4	Roods	—	1	Acre
30	Acres	—	1	Yard, of land
100	Acres	—	1	Hide of land
640	Acres	—	1	Square mile

The square inch is divided decimally and duodecimally. Both these divisions are sometimes called *lines*.

Cubic, or Solid Measure.

1728	Cubic inches	equal to	1	Solid foot
27	Cubic feet	—	1	Cubic yard
40	ditto	—	1	Ton of timber, or of tonnage of shipping.

WELD, Dyer's Weed, Wild Wood, Yellow Weed, or *Reseda*, a genus consisting of thirteen species, scattered over the globe; two indigenous to our own country; the following are the chief:

The *Luteola*, Common weld, or Dyer's weed, has the stalk a yard high, terminating in a long naked spike of yellowish green flowers; leaves lanceolate, entire, flat; found wild amidst rubbish, and the wastes of our own country; but much cultivated on account of its great utility in dyeing silk and wool of a yellow colour. See Dyeing.

Weld grows, without trouble, on the poorest soils; and is commonly sown along with, or immediately after, barley or oats, without further trouble than drawing a harrow or bush over the seeds. The reaping of the corn does it no injury, as it grows but little the first year; but is pulled the next summer, and dried like flax. Care should, however, be taken, not to injure the seed or stalk by pulling the plant too green, or letting it remain too long.

The *Odorata*, or Mignonette. See Mignonette.

WELDING, in the metallic arts, an intimate union produced between the surfaces of two pieces of malleable metal, when heated almost to fusion, and hammered.

Some late experiments have demonstrated that not only cast steel may be welded to iron, but that cast iron may be united to itself with more ease than has been commonly supposed. To weld cast steel to iron, it should not be heated to so high a temperature as is necessary to heat iron for welding, the welding heat of steel being considerably below that of iron. Cast-iron bars may be also united by the use of a proper flux,—glass of borax is usually prefered, their ends being previously enclosed in a wrought-iron tube, and heated to a proper degree, the tube serving as a mould to prevent the heated cast-iron from falling asunder during the operation.

Well. See Air, Carbonic Acid, Poisons, &c.

WEN, an indolent tumour, appearing in various parts of the body, chiefly about the face and neck.

For the treatment of the large kind of wen, commonly called Derbyshire neck, see Bronchocele. For the treatment of other wens, the best advice which we can give, unless they are painful or troublesome, is to do nothing. When they are painful, or when they produce inconvenience from their size or situation, the advice of an experienced surgeon should be obtained. See Scrofula.

WEN, in farriery, is a hard tumour, of different sizes, in various parts of the body. The most effectual method of removing them is to dissect them out together with the cyst in which they are formed. The skin is then to be stretched, and treated as a simple incised wound.

Wentle-trap. See Wreath.

Wey. See Weigh, and Weights and Measures.

WHALE, a name applied to many fishes of different genera. For several whales see Dolphin, Narwhal, and Spermaceti Whale. We shall here only treat of the genus *Balæna*, which contains, indeed, those fishes which are most commonly called whales. This genus consists of six species, which are distinguished by being toothless, and having, instead of teeth, horny laminæ in the upper jaw; spiracle with a double opening on the top of the head. They are as follow:

The *Mysticetus*, Common whale, or Great mysticete, of which there are three varieties:—one with the nostrils flexuous, on the fore-part of the head, with a dorsal fin:—another, body black, with a whitish gloss,—and another larger, and without spiracle. This species inhabits the seas towards the Arctic pole; is timid, and swims with great velocity; feeds chiefly on crab's medusæ, teats two, proportionally small; gravid from nine to ten months; produces one young, rarely two at a time; length from fifty to one hundred feet; head about a third part of the body; flattish above; mouth long, curved like the italic letter *ſ*; lower jaw very broad in the middle; tongue soft, white, adhering to the lower jaw, spotted with black at the sides; eye size of an ox's. This species is of various colours; some are reddish above, beneath white; others black, others white; and some are marbled on the back and tail, whilst others are all over marbled black and yellow; flesh like coarse beef, and very indifferent food. The mutual tenderness of the male and female for each other, as well as the latter for its offspring, is exceeded by no tribe of animals; the udder of the female resembles that of a cow, and has similar nipples; it is hid within the belly; but when she suckles her young she can produce it at pleasure, when it is protuberant from the body about two feet; it is full of a large quantity of milk, like that of land animals. The young, when first protruded, is black, and about ten feet long. This species is pursued and caught for its blubber, which yields oil, and for the horny laminæ in the mouth, usually called *whale-bone.* The blubber, or fat, is about six inches thick on the back and belly; it is sometimes a foot thick on the fins, and two feet thick on the under lip. The oil, however, obtained from these animals, is by no means equal to that obtained from the spermaceti whale.

The whale is taken by being struck with harpoons by several persons, who pursue him in boats, according to circumstances, and wound him repeatedly, till, faint with loss of blood, he expires, and lies floating on the surface of the water. It is a dangerous occupation, and requires great dexterity on the part of the adventurers.

Though the chief residence of this, and most other whales, is in the polar regions, yet they sometimes stray into more temperate latitudes, and are occasionally seen in very different parts of the ocean from those in which they generally reside.

The *Physalus*, Fin-fish, or Fin-backed mysticete, has the spiracles double on the middle of the fore-part of the head; at the extremity of the back a soft fin: length of the last, but much more slender, and less flat; mouth larger, whale-bone shorter; body brown, shining, beneath white; dorsal fin straight, acute, from three to four feet long; inhabits the American and European seas.

The *Boops*, Pike-headed whale, or mysticete, has the spiracles double on the snout, and a horny protuberance at the extremity of the back; body very smooth, black, belly white; forty-six feet long; inhabits the northern and southern oceans.

The *Gibbosa*, Hump-whale, or Knobbed mysticete, has the back gibbous, without dorsal fin. Two varieties, one with a single hump or bunch on the back; another with six bunches on the back; inhabits the coasts of New England.

The *Musculus*, Broad-nosed whale, or Under-jawed mysticete, has the spiracles double on the forehead; under jaw very broad, seventy-eight feet long; inhabits the coasts of Scotland.

The *Rostrata*, Beaked whale, or Rostrated mysticete, has the nose elongated to a peak; dorsal fin fat; colour very black; body resembles the pike-headed whale; swims rapidly; twenty-five feet long; inhabits the seas of Norway, rarely of England.

WHEAT, or *Triticum*, a genus of plants consisting of nineteen species; chiefly natives of Europe, one or two of Egypt and Barbary; some are annual, and others perennial. They are as follow:

The *Hybernum*, Winter, Lammas, or Common wheat, containing numerous varieties, which constitute most of the wheats sown in our fields: a native of Sicily.

The *Æstivum*, Spring, or Summer wheat, so called because it is sown in the spring, has four flowers in the calyx, three of which mostly bear grain; the calyxes stand pretty distant from each other, on both sides of a flat, smooth receptacle. The leaves of the calyx are keel-shaped, smooth, and terminate with a short arista. The glumes of the flowers are smooth and bellying; the outer leaf of the glumes, in every calyx, terminated by a long arista; but the three inner ones are beardless. The grain is rather longer and thinner than the common wheat. It is supposed to be a native of some part of Tartary.

The *Compositum*, or Cone wheat.—The *turgidum*, or Cone wheat.—The *polonicum*, or Polish wheat.—The *spelta*, or Spelt wheat.—The *monococion*, or One-grained wheat.—The *Hispanicum*, or Spanish wheat.—The *pumilum*, or Dwarf wheat-grass.

The preceding ten species are annuals; what follow constitute the perennial tribe.

The *Junceum*, or Rush wheat-grass.—The *caninum*, or Dog-wheat-grass.—The *distichum*, or Double wheat-grass.—The *repens*, or Couch; a well known weed with creeping roots; see WEEDS.—The *maritimum*, or Sea wheat-grass. The *tenellum*, or Tender wheat-grass. The *unioloides*, or Linear spiked-wheat-grass. The *loliaceum*, Loliaceous, or Darnel wheat-grass, and the *unilaterale*, or Unilateral wheat-grass

There are two distinct kinds of wheat cultivated in this country; the smooth, or polled wheat; and that which has a rough, or bearded ear. The first sort, of which there are many varieties, is by much the most cultivated, as it affords the finest kind of flour; but the latter, which is frequently termed *rivet* wheat, from its yielding a large produce on the more stiff and wet clayey soils, as well as from its being less liable to disease and injury from wet when cut, is not unfrequently grown in such sorts of land. The common wheat is most adapted to the dry and mellow kinds of soil; but it may be cultivated on others where proper care is taken to keep the moisture from stagnating too much on the land.

Among the various sorts of wheats which are cultivated we may mention the *brown*, *yellow*, and *red lammas*, the *white straw*, the *Fulham*, and the *white*, or *egg-shell*

The first is the common brown-strawed wheat, which grows with a long jointed ear, the chaff of a dark brown colour; the straw long, and apt to fall; the hull, or bran thin, the flour very white, and the corn mellow in grinding. The yellow lammas resembles the brown in every respect, except that the colour of the grain is of a yellow hue, and the chaff of a somewhat lighter tint. The white-strawed sends out a greater number of stems than the other sorts; and is, in consequence, often a very thick crop on the land. New varieties of wheat are, however, continually introduced. Within the last thirty or forty years the *hoary white*, the *nonpareil*, the *pilbeam*, the *square ear*, and the *hoary brown*, have been sown with more or less advantage. *Cone wheat* is named from the form of the ear; of this there are several varieties. Of *Rivet* wheat there are two kinds, *white* and *brown*. But, however, of all these, the *white* and *red* of the smooth or polled kinds of wheat are most esteemed; the *bearded*, or *rivet* wheat, although more productive, is a coarse grain, and sells at an inferior price.

Spring wheat has not been cultivated so extensively in this country as to enable us to speak with decision of its merits; but it is said that, although sown so late as the 11th of May, it ripens at the same time as that sown in Autumn. It appears deserving of more attention than it has hitherto obtained.

Common wheat succeeds, in general, to most advantage on such soils as are of the more deep, strong, and fertile nature; but where the superficial parts are not so stiff or adhesive as to be incapable of falling down, or breaking into a fine state. It may, however, be grown on lighter kinds of land. It is advantageously sown where the land has received a complete summer fallow; or still more advantageously, perhaps, after different kinds of green root, and other crops. In this way it may be sown after clover, tares, peas, beans, turnips, potatoes, and similar crops; it may be also put in after flax and hemp.

In whatever kind of soil this crop is put, the land should be brought, by ploughing, harrowing, &c., into a state of considerable pulverization and mellowness.

The best time for sowing wheat would seem to be about the beginning of September, especially if rain have fallen. It is a general practice, and a good one, among farmers, to make choice of a time for sowing wheat when the earth is moist. Wheat may, however, be sown in October or November, when the season is mild and open; indeed, so much must depend upon season and other circumstances, that no general rule can be advantageously laid down. It may, however, be observed, that an early sowing requires less seed than a late one; and the plants rise better, and acquire strength to resist the severity of the winter. More seed should always be allowed for poor lands than for rich; rich lands, when sown early, require the least seed of any. In estimating the quantity of seed, it should be made, not from the capacity of any particular measure, but rather from the number of grains which that measure will contain; because the grains of some wheats, though equally good, are much smaller than others. Instead of the usual allowance of three bushels of seed per acre, broadcast, repeated trials have shown that half that quantity is generally more than sufficient; it is a common practice to sow more seed upon newly broken up ground, than upon that which has been long in tillage. From half an inch to three inches is the usual depth at which wheat is planted, according to the nature of the soil; the stiffest land requiring the shallowest sowing.

In the drilling and dibbling methods of sowing, which are, unquestionably, the best, when properly performed, six pecks of seed per acre are sufficient.

The after culture of this crop will depend, in some degree, on the manner in which it is put into the ground; but in every case it must be kept perfectly clean from weeds, either by means of the horse or hand hoe. Stirring the mould on the surface, among the plants, may be frequently useful in other intentions besides that of preventing the growth of weeds. The practice of scarifying the young wheat is an important part of the drill culture, which should constantly be performed in an effectual manner, and not later than March. The roller may also be sometimes advantageously used, either with or without the previous use of the harrow; it may be also of use in preventing the destructive ravages of the worm. And when the young wheats are forward and rank, they may be advantageously eaten down by sheep.

For the rest of the management of this crop, our readers will be pleased to refer to **Husbandry**; and for the prevention of diseases to which wheat is liable, see **Rust** and **Smut**.

We have, under **Bread**, pointed out the value and importance of wheat as an article of food; to which, and also to **Flour**, we refer.

As, however, it may be desirable on this important subject to have, at one view, a comparative table of the nutritive properties of wheat, and other vegetable substances, the following is from Sir Humphry Davy's *Elements of Agricultural Chemistry;* and, although we do not consider it a perfect one, it is, nevertheless, one from which a tolerable estimate of their qualities may be made.

A Table of the Quantities of Soluble or Nutritive Matter afforded by 1000 *parts of different vegetable substances.*

VEGETABLES, OR VEGETABLE SUBSTANCES.	Whole quantity of soluble, or nutritive matter.	Mucilage, or starch.	Saccharine matter, or Sugar.	Gluten or albumen	Extract, or matter rendered insoluble during evaporation.
Middlesex wheat, average crop ..	955	765	—	190	—
Spring wheat	940	700	—	240	—
Mildewed wheat of 1806	210	178	—	32	—
Blighted wheat of 1794	650	520	—	130	—
Thick skinned Sicilian wheat of 1810	955	725	—	230	—
Thin skinned Sicilian wheat of 1810 ..	961	722	—	239	—
Wheat from Poland ..	950	750	—	200	—
North American wheat	955	730	—	225	—
Norfolk Barley	920	790	70	60	—
Oats from Scotland....	743	641	15	87	—
Rye from Yorkshire...	792	645	38	109	—
Common Bean	570	426	—	103	41
Dry peas	574	501	22	35	16
Potatoes	from 260 to 200	from 200 to 155	from 20 to 15	from 40 to 30	— —
Linseed cake	151	123	11	17	—
Red beet............	148	14	121	14	—
White beet	136	13	119	4	—
Parsnip	99	9	90	—	—
Carrots	98	3	95	—	—
Common turnips......	42	7	34	1	—
Swedish turnips	64	9	51	2	2
Cabbage	73	41	24	8	—
Broad-leaved clover ...	39	31	3	2	3
Long-rooted clover	39	30	4	3	2
White clover	32	29	1	3	5
Sainfoin	39	28	2	3	6
Lucerne	23	18	1	—	4
Meadow fox-tail grass	33	24	3	—	6
Perennial rye grass....	39	26	4	—	5
Fertile meadow grass ..	78	65	6	—	7
Roughish meadow grass	39	29	5	—	6
Crested dog's tail grass	35	28	3	—	4
Spiked fescue grass ..	19	15	2	—	2
Sweet-scented soft grass	82	72	4	—	6
Sweet-scented vernal grass............	50	43	4	—	3
Fiorin	54	46	5	1	2
Fiorin cut in winter ..	76	64	8	1	3

Wheat, buck. See Buck Wheat.

Wheat, Cow. See Cow Wheat.

Wheat-Ear. See Warbler.

Wheat, Indian. See Maize.

WHEAT SUGAR A preparation under this name has been brought into notice by Mr. Kirchoff of St. Petersburg, and also by the chemists of France.

It is made by boiling starch with sulphuric acid thus: digest a pound of starch in six or eight pints of distilled water, rendered slightly acid by two or three drachms of sulphuric acid. The mixture should be simmered for a few days, fresh portions of water being occasionally added, to compensate for the loss by evaporation. After this process the acid is saturated by a proper proportion of chalk, and the mixture filtered, and evaporated to the consistence of syrup; its taste is sweet, and by purification in the usual way it affords crystallized sugar. The contact of air is unnecessary in the above process; no part of the acid is decomposed, no gas is evolved; and the sugar obtained exceeds by about one-tenth the original weight of the starch: it is concluded, therefore, that the conversion of starch into sugar depends upon the solidification of water. See Malt.

Wheat, Turkey. See Maize.

WHEEL ANIMAL, or *Rotifier*, a microscopic animalcule, found in the sand of tiles and sewers; it obtained the name of wheel-animal from its peculiar formation. Its posterior part is provided with a minute trident, and the anterior divides into two trunks, bearing two most singular wheels at the summit. If the sand in which it exists be put in water, and remain infused in it for some time, it will exhibit all its organs. If the water fail, the action of the wheels and supposed heart ceases; the animalcule gradually loses motion, and becomes apparently lifeless; it contracts, grows very minute, and assumes the resemblance of a piece of dry macerated skin; but if the sand be moistened it revives, the body soon extends, and the wheels and trident re-appear. They have been thus revived after a lapse of one, two, or even more years.

For another wheel animal. See Vorticella.

WHELK, or *Buccinium*, a genus of univalve testaceous worms, consisting of one hundred and ninety species, scattered over the shores of the different parts of the globe; the shell is spiral, gibbous, with an ovate aperture, terminating in a short canal, leaning to the right with a retuse beak, or projection; pillar-lip expanded. They may be thus subdivided:—inflated, rounded, thin, subdiaphonous and brittle,—with a short, exserted, reflected beak, lip unarmed outwardly,—lip prickly outwards on the hind part,—pillar-lip dilated and thickened,—smooth,—angular,—tapering, subulate, smooth. Those chiefly worthy of notice are the *lineatium,* found on the Cornish coast in great abundance; and the *capillus,* Purple-whelk, or Horse-wrinkles; the elegance and colouring matter of this last are described in the Philosophical Transactions for 1684.

Whetstone. See Sandstone and Turkey-stone.

WHEY, or *Serum,* the well-known watery part of milk. See Milk, Cheese, and Butter.

The following medicated wheys are occasionally useful:

Mustard whey. Boil one ounce and a half of bruised mustard seed in a pint of milk, and an equal portion of water, till the curd be entirely separated; then strain it through a cloth. This preparation is one of the most pleasant forms in which mustard can be taken. The dose is a tea-cupful; it may be sweetened with a little sugar; and taken two or three times a day according to circumstances.

White wine whey. Pour equal parts of white wine and skimmed milk into a bason, and after they have stood a few minutes, add a double portion of boiling water. In a short time the curd will collect and subside to the bottom, the whey is now to be strained into another vessel, and sweetened with sugar: it may be flavoured with balm, or a slice of lemon. This whey is an agreeable drink when retiring to rest after fatigue, or after being exposed to the inclemency of the weather, it exciting a gentle prespiration, and may thus sometimes obviate a sudden cold or catarrh.

Whiff. See FLAT-FISH.

Whimbrel. See CURLEW.

Whin. See FURZE.

Whin Chat. See WARBLER.

Whirl. See WHORL.

WHISKY, a spirituous liquor, prepared chiefly in Scotland and Ireland, by distillation from fermented barley.

The strength of whisky may be known on reference to our article, SPIRIT OF WINE. But of its salubrity we cannot speak with commendation: it appears to contain some ingredients which are peculiarly detrimental to the stomach.

WHITE-LEAD, CARBONATE OF LEAD, or CERUSE, is made in various ways. If an alkaline carbonate is added to nitrate of lead, a white precipitate of carbonate of lead falls; it is tasteless, insoluble in water, but soluble in fixed alkaline solutions. It is employed as a white paint, being ground with linseed oil, or turpentine; with which last it is called *dead-white*.

White lead is, however, usually prepared by exposing sheet lead to the action of the vapour of vinegar: the process is described in Aikin's Dictionary, article LEAD. It consists of 104,5 oxide of lead, and 20,7 of carbonic acid. See COLOUR-MAKING, and LEAD.

Native carbonate of lead is one of the most beautiful of the metallic ores; it occurs crystallized and fibrous; the former transparent, the latter generally opaque. It is soft and brittle, and occasionally tinged green with carbonate of copper, or grey, with sulphuret of lead. The octoedron is its primitive form; it also occurs prismatic and tabular. It has been found in Cumberland and Durham; the acicular variety of great beauty in Cornwall.

White ant. See TERMES.

White bait. See CARP.

White beam. See THORN.

White nun. See MERGANSER.

WHITE ROT, WATER NAVELWORT, or *Hydrocotyle*, a genus of plants comprehending nineteen species, chiefly natives of the Cape, the West Indies, and America; two indigenous to our own marshes; one of these, the *vulgaris*, or Marsh penny-wort, with five-flowered umbels, has been supposed, without reason, to produce the rot in sheep. The other indigenous species is the *inundata*.

Whites. See FLUOR ALBUS.

WHITE-SWELLING, or *Hydarthrus*; a disease of the joints, very common in this country; it affects most usually the knee, the ankle, the wrist, and elbow. As the name of the disease implies, the skin is not, at least in its commencement, altered in its colour. In some instances, the swelling yields in a certain degree to pressure; but it never fails, and is almost always sufficiently firm, to make an uninformed examiner believe, that the bones contribute to the tumour. The pain is sometimes vehement from the first; in other instances, there is hardly the least pain.

This complaint has been commonly divided into the *rheumatic* and the *scrofulous* white swelling; but there are, nevertheless, many other varieties, which it is not consistent with the limits of our work to notice, nor perhaps would such notice be of much practical utility to our readers. All the kinds are troublesome diseases, and cured with great difficulty, sometimes not at all.

The *rheumatic* white-swelling is attended with acute pain over the whole joint, and which is increased by heat; the patient finds the greatest relief in a relaxed position; the tendons become rigid; and the joint appears as if the bones were enlarged. The tumour increases to three or four times the size of the knee, and feels elastic to the touch while the limb decreases or becomes dropsical; at length, abcesses are formed, discharging matter which soon degenerates into a fetid ichor. Unless the cure be timely effected, the patient is attacked with a hectic fever, which generally closes the scene.

In the *scrofulous* kind, the pain is more acute, and confined to *one spot;* the centre of the joint, or the head of the tibia, if the knee be the seat of the disorder: as the complaint proceeds, the swelling and stiffness increase, while the ends of the bones become visibly enlarged. Similar elasticity as in the rheumatic kind is perceptible, and abscesses are also formed, which, on being opened, discharge an offensive humour; the bones decay, and pieces are often ejected through the orifices of the wounds; the adjacent parts become progressively affected, the general health is undermined, and the patient's sufferings end in hectic fever and death.

The causes of these complaints are not always known: the most common are suppressed perspiration; injudicious treatment of cutaneous disorders, especially of the measles, small-pox, erysipelas, &c. *External violence,* such as falls, blows, and frequent kneeling, have often brought on the complaint: too much care cannot therefore be taken in guarding against such common causes of this distressing malady.

In the rheumatic white swelling, which is at first of an inflammatory nature, it will be advisable to adopt a cooling regimen; and blood should be taken from the diseased part by cupping, or scarification either of which is preferable to venesection, or the application of leeches; and it may be repeated according to the strength of the patient, and urgency of the symptoms. Next a blister must be applied to the opposite side, and kept open till the scarified part is healed.

Internally, mild cooling laxatives, such as sulphate of magnesia, should be taken occasionally; heating liquors, as well as stimulating food, must be also avoided. If a stiffness of the knee remain after the swelling has subsided, great benefit will be derived from the application of pure warm olive-oil, and from gentle frictions, repeated three or four times a day. If, however, a suppuration has taken place, which may be known by the softness of the tumor, these frictions must be avoided, and recource be had to the experienced surgeon.

In the treatment of *scrofulous* white swellings, what is said under SCROFULA should be carefully attended to. When this complaint is confined to the smaller joints, it has, by those means, been sometimes cured; but when the larger joints, such as the knee, ankle, &c. are diseased, amputation is, we fear, the only remedy: and, sometimes, if the whole system be tainted with a scrofulous acrimony, even that operation is frequently ineffectual.

In these complaints, the best medical and surgical advice should at once be had. We think, however, that the warm, or vapour bath, in many cases of white swelling, may be eminently advantageous. See BATH.

White-thorn. See THORN.

White-throat. See WARBLER.

WHITE-VITRIOL, or SULPHATE OF ZINC, a combination of zinc and the sulphuric acid, and used for many purposes in the arts, and also as a medicine. See ZINC.

WHITE-WASHING, the act of whitening ceilings, walls, &c. with a mixture of quick-lime and water, to which a little size is occasionally added.

The practice of white-washing apartments eminently contributes to the preservation of health; and should be enjoined by those having influence in society, and particularly by landlords to their tenants, whose poverty is more likely to engender disease. In performing this operation, it should be known that hot or quick lime is preferable to any other, and should be used as soon as possible after it is slacked: by attending to this circumstance, its effects in destroying vermin, and removing infection, will be considerably increased. It is too common a practice in London and other large towns, to white-wash with *whiting;* which is a carbonate of lime; this should be discountenanced, and the use of quick-lime enforced.

WHITING, a white substance well known in commerce, and domestic economy: it is simply chalk levigated and washed.

Whiting, a fish. See Cod.

Whiting pout. See Cod.

WHITLOW, or Whitloe, called sometimes *felon*, is a painful and inflammatory swelling at the extremeties of the fingers, under the nails; terminating in an effusion of clear serum below the skin, which is sometimes so acrid as to corrode the periosteum, and render the bone carious. At other times the inflammation is so great that the whole arm swells, and sometimes even the glands in the axilla, or arm-pit.

When this affection arises from external violence, the remedies employed for inflammation in general will be of service, such as poultices: when it arises from unknown causes, ardent spirits and astringents will be useful, particularly when topical and general bleedings have been previously used. When an effusion of serous matter takes place, it is immediately to be discharged, as it is almost impossible to convert it into proper pus. When the bone is carious, the bone, or at least the carious portion, must be removed; and this must, of course, be done by the experienced surgeon.

Many complaints of this kind, after the application of the poultice described under Abscess, for a few days, may be readily cured by simply letting out the collected humours, and afterwards binding up the part moderately tight with *dry lint*. The common ointments are useless and improper. The lint should be removed two or three times a week, previous to which removal, the part should be well soaked in warm water.

WHITLOW GRASS, Nail-wort, or *Draba*, a genus of plants containing sixteen species, some leafy, others leafless, in their stems; they are chiefly natives of the South of Europe, but three or four indigenous to our own country; of these, the *Verna* is the most common; it is found on old walls, with naked stalks, lanceolate, hairy, slightly serrate leaves, and white flowers, which appear very early in the spring; it is eaten by horses, sheep, and goats. A more elegant species, the *Aizoides*, found by Dr. Turton, on the maritime rocks at Gower.

Whitlow worm. See Hair worm.

WHORL, Whirl, or Verticil, in botany, a sort of inflorescence made u of many subsessile flowers surround in the stem in a ring.

Whort, or Whortle berry. See Vaccinium.

Whortle bear's. See Strawberry-tree.

Widgeon. See Duck.

Wife. See Husband and wife.

Wild Basil. See Thyme.

Wild Boar. See Swine.

Wild Carrot. See Carrot.

WILD CUCUMBER. We have anticipated what we have to say relative to this plant under Elaterium and Momordica, to which, therefore, the reader will please to refer.

WILD LIQUORICE, or *Glycine*, a genus of plants consisting of forty-five species, natives of South America, the Cape, and India. They are all of the vetch, or kidney-bean tribe, and many of them have been erroneously arranged under the Phacelous, or Kidney bean. The plant most cultivated is the *frutescens*, or Carolina bean, with bracted racemes, a twining shrubby stem, and blue flowers.

For another wild liquorice see Milk Vetch.

Wilding. See Crab and Apple-Tree.

WILD RICINUS, or *Croton*, a genus of plants comprehending fifty-one species, scattered over Europe, Asia, Africa, and America. The chief of these are

The *Tinctorium*, or Turnsole, a native of the south of Europe, with rhombic repend leaves; pendulous capsules, and an herbaceous stem, rising annually about nine inches high, with axillary pancled flowers. It flowers in July; but requires, in this country, the warmth of a hot-bed to ripen its seeds. The turnsole used as a colouring matter in confectionaries and chemistry, is made from the juice loosed between the empalement of the seeds. See LITMUS and TURNSOLE.

The *Sebiferum*, or Tallow-tree. See TALLOW-TREE.

The *Tiglium*, or Parvana wood, a native of India, with ovate, pointed, serrate, glabrous leaves, and an herbaceous stem. The wood is the Parvana wood, and the seeds the *grana tilia*, formerly in the dispensatories, but now little known: they are strongly purgative.

The *Lacciferum*, or Gum-lac-tree, is also a native of the East Indies; the officinal gum-lac is found on this tree. See LAC.

WILL, a term in morals in very general use; but which is applied in such various acceptations as to have become one of the most inconvenient words in the English language. The simple meaning of the *will* is, doubtless, the desire or disposition of the mind to do any act, or to obtain any thing; and is nearly synonymous with wish. This desire, or disposition, is, of course, the *effect* of some previous operation of the mind, which operation is produced by some cause or causes. But the will has been also defined that power by which we desire and purpose; and at other times it has been defined volition, or the act of willing. Such different meanings being applied to the term *will*, we do not apprehend it can become more clear when the word *free* is added to it. Thus by *free-will* some persons mean a power of choosing; whilst others mean, by this term, a power of the mind by which, notwithstanding any motives or predispositions, we are enabled to do whatever we please; so that, according to this notion of free-will, two persons placed in *exactly the same circumstances*, may act diametrically opposite; but if there be any truth in the doctrine of morals which we have inculcated in this work, this cannot be; and, hence the impropriety of the use of the term free-will in moral and philosophical language. We are not desirous of enlarging upon this subject here: for every practical purpose, what we have said under our articles BIGOTRY, CAUSE, CHANCE, CIRCUMSTANCES, DIFFERENCE OF OPINION, EDUCATION, MIND, &c., throughout our work will, we trust, be satisfactory; and to which, therefore, the reader will refer.

WILL and TESTAMENT, a written deed, or instrument, signed by a testator, or person disposing of his property after his decease, in the presence of proper witnesses. Wills are, however, of two kinds, written and verbal; but, as verbal wills are liable to great misconstruction, and for lands and tenements are not binding in the law, all wills ought, if possible, to be written, and witnessed: three witnesses are the most the law requires. See EXECUTOR.

No person having property at his disposal, and desirous that it should descend to persons not at his death legally entitled to it, or who is desirous of preventing all kind of litigation and dispute amongst relations or other persons, after his death, should delay for a moment the disposal of his estate and effects by will. This step is an *imperious duty*, and more especially is it so where property is of such a kind, land for instance, as will descend to the eldest son by the law of this country, unless by will disposed of otherwise. A neglect of this necessary duty, the *duty of making a will*, and *disposing equitably* of property, has been the source of innumerable animosities and bickerings in families, which a timely attention to such a duty might generally prevent.

A will requires no stamp when executed. The duties on wills are paid by the executor when the probate is obtained.

WILLOW, OSIER, WITHY, or *Salix*, a genus of plants comprehending seventy species, chiefly natives of Europe, a few of the other quarters of the globe; thirty-eight indigenous to the marshes, rivulets, moist sands, moist woods, and hedges of our own country. They are thus subdivided:—leaves serrate, glabrous, or nearly so,—leaves quite entire, or nearly so,—leaves villous. The following, which are the cultivated species, are the chief:

The *Triandra*, or Long-leaved, three-stamened willow, rises thirty feet or more in height, but being one of the best osiers for the use of basket makers, is generally cut and kept low; the bark of the stem and branches spontaneously exfoliates like that of the plane-tree; leaves linear, oblong, three or four inches long; the margins thickly serrate; sometimes flowers both in spring and autumn.

The *Pentandra*, or Bay-leaved willow, rises ten or twelve feet high, and is distinguished on account of its broad odoriferous leaves; the bark is astringent and bitter; sometimes employed medicinally, the same as the bark of the crack willow. See below.

The *Vitellina*, or Yellow willow, is a middle-sized tree, much branched at top; wood white and tough; the shoots used by basket-makers; the bark is occasionally used in medicine and dyeing.

The *Amygdalina*, or Broad-leaved three-stamened willow, has the leaves ovate oblique; trunk low, bark deciduous; found in bogs.

The *Hastata*, or Halbert-leaved willow, has somewhat ovate, acute, sessile leaves; a low tree found in Lapland and Switzerland.

The *Fragilis*, or Crack-willow, is one of the largest trees of the willow genus; leaves lanceolate, pointed; a native of most parts of Europe, more especially the northern parts; indigenous also to our own rivulets; bees are fond of the male flowers. The bark is given medicinally. See below.

The *Babylonica*, or Weeping willow, grows to a large tree; leaves linear-lanceolate; a common and highly ornamental tree; delights in moist places; a native of the Levant.

The *Purpurea*, or Bitter purple willow, is a bushy shrub, three or four feet high, with slender purple shining branches, and leaves obovate lanceolate; indigenous to the rivulets of England.

The *Helix*, or *Rose willow*, is a slender tree, rising nine or ten feet high, with rose-like excrescences at the end of the branches, whence its English name; leaves lanceolate, pointed; a native of England and many parts of Europe.

The *Fissa*, or Basket osier, is a shrub rising four or five feet in height, with erect, flexible, and very tough branches, of a yellowish ash colour, sometimes purplish; leaves alternate, pedicelled, minutely toothed; a native of various parts of Europe, on the sandy banks of rivers; cultivated in England, as preferable to all others of the tribe for basket work.

The *Rubra*, or Green osier, is an indigenous shrub, with linear-lanceolate, elongated, acute leaves.

The *Caprea*, or Round-leaved sallow, grows to a large tree; leaves ovate, pointed, serrate, downy underneath; bees are fond of its flowers; its bark is employed medicinally; see below; a native of our own woods.

The *Cinerea*, Common sallow, or Ashy-leaved willow, rises from six to twelve feet high; leaves nearly very entire, obovate-lanceolate; indigenous to our boggy woods.

The *Alba*, or White willow, is a large and lofty tree, of quick growth, but soon decays when topped; leaves lanceolate, pointed, serrate; wood white, light, tough; a native of our own woods.

The *Viminalis*, or Osier, is a tall, slender, obsequious, quick-growing shrub; leaves lance-linear, very long, pointed, very entire; branches wand-like.

All these are fond of watery situations, but will grow in any soil; they are usefully cultivated in low wastes, and on the sides of moist ditches, for basket work. They are all most readily and easily propagated by cuttings, from a year old to six, or even more.

The barks of the *fragilis*, or Crack-willow, the *alba*, or White willow, and of the *caprea*, or Round-leaved willow, are now received into our materia medicas, and sometimes ordered as a substitute for the Peruvian bark; and in some cases of intermittents and remittent-have been successfully administered. They also afford relief in debility, dyspepsia, and pulmonary hæmorrhages; and, it is said, they have been even more serviceable in phthisis and hectic fever than the Peruvian bark. They may be given in substance, or in the form of decoction. Of the powdered bark, from half a drachm to one drachm may be given for a dose, combined with aromatics, myrrh, or Peruvian bark, according to circumstances.

We ought perhaps to mention that the London College orders only the bark of the *caprea*; the Dublin college orders the bark of the *fragilis* and the *alba*.

WILLOW-HERB, or *Epilobium*, a genus of plants comprehending thirteen species, of which eight are common to the meadows, woods, or ditches of our own country; the blossom is usually red, and often beautiful. Some of the species have an intoxicating quality: the *angustifolium*, or Rose-bay willow-herb is one of these; the young shoots of which are however said to be little inferior to asparagus, when boiled. The down of the seed has been lately introduced into our hat and cotton manufactories; this species is common in our moist woods. Another of our indigenous species is the *hirsutum*, Great hairy, large-flowered willow herb, or Codlings and cream; it has large, beautiful, purple flowers.

Wimbrel, or *Whimbrel*. See CURLEW.

WIND, a sensible current in the atmosphere.

The chief causes of the wind are doubtless the alternations of temperature, to which may be added other occasional causes, such as electrical phenomena, the decomposition of gases in the atmosphere, &c.

In this country southerly winds are very often accompanied with rain or moisture; and in such states of the atmosphere, as its pressure is diminished, the circulation of the blood is often not carried on with the vigour necessary to health: such winds are therefore commonly considered, and tritely called, relaxing. On the contrary, northerly, or north-easterly winds, are generally called and considered bracing; and merely so, we presume, in consequence of the pressure of the atmosphere being greatest when the winds are in that quarter. In other words, when the wind blows from some of the southerly points the air is very often light, and we may anticipate rain; and when from the northern or north-eastern regions it is often heavy, and we may anticipate dry weather. There are numerous exceptions to these meteorological outlines, relative to some of our winds, and their effects, but the general facts are, we apprehend, indisputable. See BAROMETER, CLIMATE, METEOROLOGY, and WEATHER.

When the wind moves only 1 mile in an hour, its motion is hardly perceptible;—2 or 3 miles it is just perceptible;—4 or 5 gently pleasant;—10 to 15 pleasant, brisk;—20 to 25 very brisk;—30 to 35 a high wind;—40 to 45 a very high wind;—50, storm or tempest;—60, a great storm;—80, a hurricane; and when it moves 100 miles an hour it is a hurricane, tearing up trees, and carrying buildings before it.

Wind-flower. See ANEMONE.

Wind-broken, in a Horse. See BROKEN-WIND.

WIND-GALLS, in farriery, small elastic tumours, on each side of the back sinews, immediately above the fetlock joint; they consist of enlarged mucous capsules, and are generally caused by hard work, at too early an age. They do not often occasion lameness, and, unless so considerable as to cause some degree of stiffness in the joint, are better only bandaged, or by having some stimulating embrocation well rubbed in; see LINIMENT. But when they cause lameness, or are attended with weakness of the fetlock joint, firing, blistering, and rest, are the best remedies. They are sometimes opened, and the contents discharged, and some escharotic is afterwards applied; but although this method sometimes succeeds it is not always successful.

WIND-INSTRUMENTS, those musical instruments which are played by the assistance of wind or air. The chief of these are the fife, flageolet, double flageolet, flute, French-horn, hautboy, bassoon, bag-pipes, clarionet, and trumpet. There are, however, many others which we cannot enumerate.

Although occasional playing on these instruments may be, and undoubtedly is, to those persons who have a taste for music, agreeable, and forms a pleasant relaxation from both business and study, yet, a constant application of the lungs in the inflation of almost any of these instruments, is by no means to be recommended: for as the muscles of the abdomen are, in the process, necessarily contracted, the circulation of the fluids is impeded, and the foundation of cough, asthma, pulmonary consumption, or other fatal maladies, is, not unfrequently, by such means, laid.

Windpipe. See TRACHEA.

Windsor-soap See SOAP.

WINE, or *Vinum*, the fermented juice of the grape. There are, however, many other fruits from which a sweet fluid may be obtained, and which, when fermented, becomes a vinous liquor. Of such fruits, we have in this country, the apple, the pear, the cherry, the gooseberry, the currant, &c. &c. But by far the most valuable of these fruits is the grape, which grows luxuriantly in the southern parts of Europe, Madeira, the Cape of Good Hope, &c.

The principal substances held in solution in grape-juice are *sugar*, *gum*, *gluten*, and *super-tartrate of potash*. It easily ferments spontaneously at temperatures between 60° and 80°, and the phenomena to which it gives rise, closely resemble those of the wort with yeast. After the operation, its specific gravity is much diminished, its flavour changed, and it has acquired intoxicating powers.

The expressed juice of the ripe grape is called *must*. This, in the wine countries, is placed in large casks, or vats, and there spontaneously undergoes the vinous fermentation, and deposits an impure crystalline salt, of a whitish or reddish colour, according to the colour of the grapes, on the sides and bottom of the vats; this is called *tartar*, or in commerce *argol*; see TARTAR. For the medicinal qualities of foreign wines, see the latter part of this article.

The particular method in which the manufacture of the different wines is carried on in the wine countries is not accurately known here; and if it were, from the difference in climate, and the nature of the grape juice of our own country, it is doubtful whether these methods could be applied by us with advantage. And notwithstanding many persons have strongly advocated the manufacture of domestic wines, we cannot avoid thinking that it will be always difficult, if not impossible, by any art whatever, to produce wines in this country, which can, either in flavour or quality, compete with such as port or madeira. As, however, many of our readers may be of a different opinion, we will endeavour to embody in this article, the best and most scientific directions and information relative to the making of domestic, or home-made wine, premising that we have had some experience in the art ourselves, and also that every wine-maker should not only attend to the following observations, but consult our articles FERMENTATION, and SPIRIT OF WINE, under both of which will be found much important information which need not be repeated here.

The principles which are more immediately necessary for the conversion of the juice of fruits into wine, are water, sugar, tartar, and vegetable mucilage: to these must be added, a suitable degree of temperature, without which no good wine can be made: from 60° to 80° is, most probably, the best range: colour and flavour may be regarded as adventitious, both being readily communicable by art. The presence of tartar, is among the foregoing ingredients, essential to the fabrication of genuine wine; and the addition of this substance, when it is not naturally present in sufficient quantity, not only meliorates the quality, but increases the quantity of spirit, which a given portion of sugar is capable of yielding; hence the addition of tartar to our native fruits, which are invariably deficient in this substance, will prove advantageous. The *malic acid,* on the contrary, is injurious to our domestic wines, and almost invariably imparts to them the properties of cider. *Sugar* is, however, to be considered the fundamental substance in the making of wines; and to this only we must look for their strength. Those fruits, therefore, which contain the greatest quantity of sugar, furnish the strongest wine. It is this principle in which our domestic fruits are most defective; but it is, at the same time, one which can be most readily supplied by the addition of the sugar of the cane. In the addition of this material, it may be useful to know, that the saccharine matter which exists in treacle, or molasses, is more readily converted into spirit of wine, than it is in refined sugar; and that, generally, the purer the sugar is, the more it is freed from vegetable extractive matter, the more *leaven* will be necessary to perfect the fermenting process.

The natural leaven of fruits appears to be *gluten*; it is found in abundance in wheat and rye, and, as is well known, acts powerfully as a ferment. This substance is also a constituent of yeast, and hence most probably the fermenting properties of yeast arise. Gluten exists also in abundance in the flowers of elder, and other plants, as well as in gooseberries, and many of our native fruits; it is also found in the grape, and in the leaves and succulent tendrils of the vine. This substance being the natural leaven of fruits, or that by which their sugar, whether combined with it in the form of the sweet principle, or separately existing, is capable of undergoing the vinous fermentation; it is, therefore, to a due proportion of it that we must look for the conversion of the saccharine juices, or other saccharine solutions into wine.

Tannin is contained both in the husks and stems of certain grapes, and communicates to the liquor, at the pleasure of the operator, that roughness well known in port wine. It is also found in our own fruits, the sloe and the damson; and it may be given at any time by the addition of kino or catechu.

The flavours of particular vegetables are not so easily communicable to wines, as have been commonly supposed. Whilst any undecomposed sugar remains in them, the flavour is more or less apparent, but when the wine is completely fermented, the flavour, dependent upon vegetable extractive matter, is generally lost.

In the fermentation of wine, a portion or the whole of the leaven or gluten, as above mentioned, is separated in two forms, one yeast, and rising to the surface, the other leys, and sinking to the bottom of the vessel.

If certain proportions of sugar and leaven, whether natural or artificial, be taken, and the fermentation proceeds regularly, the result will be a vinous fluid, containing neither sugar nor acid; but, if the quantity of leaven be not sufficient to produce this result, the wine will then contain unchanged sugar, and be, of course, a sweet or imperfectly-fermented wine. Such are almost all our domestic wines: a large quantity of sugar is added to a proportion of the juice of the fruits so small, that the compound does not contain sufficient natural leaven; and to remedy this, if yeast of beer be added in sufficient quantity, it invariably communicates a disagreeable flavour. The practice, therefore, of adding yeast should be avoided. The true remedy is so to balance the vegetable juice and the sugar as to produce a fluid analogous to the juice of the grapes: one in which there should be a proportion of natural leaven sufficient to convert the whole of the fluid into wine.

If, after some time, the wine should not appear to be sufficiently fermented, it will be found useful to break the head which rises, and return it into the fermenting fluid; or to agitate the mixture in such a way as to unite the leaven with the liquor repeatedly, till the desired effect is produced.

The *temperature* is one of the external circumstances which has the greatest share in influencing the act of fermentation; it has been considered that a temperature of 54°, is that which is most favourable to the proper fermentation of wine: but we are disposed to consider this many degrees too low. For cider and perry it may be high enough, but for wines we think above 60° better than below it: of course very hot and very cold temperatures are equally improper. We apprehend that, in addition to other circumstances mentioned above, in keeping the wine at a proper degree of temperature during the whole time of its fermenting process, depends, in great measure, the goodness and perfection of the wine; and, in our judgment, the difficulty of doing this in our climate, is one of the chief causes of our failure in wine-making.

It is also deserving of consideration, that some wines which are imperfectly fermented, remain quiescent during the winter, and on the return of spring, the fermentation is re-excited. By bottling at this time, we obtain a brisk wine, which, if bottled either in the cold of winter, or after the second fermentation, would be dead or still. At such second fermentation, flavouring matters may be advantageously added; and also spirits if ever allowable, may then be best introduced.

Nor is it of trifling consideration, where the wine is deposited when it is fermented. If any sugar be still undecomposed in it, and few wines are found without some undecomposed sugar, in order that it may improve by age, it should be kept in that temperature, in which the fermentation may be promoted. But where a brisk wine is wanted, that is, a wine with *carbonic acid* in it, as above-noticed, if it be kept in a high temperature, there is danger that the bottles may burst. It will be impossible for us, in the limits to which we are necessarily confined, to pursue this subject further; we shall now, therefore, proceed to lay before our readers a few of the most useful forms for making English wines.

Wine from unripe gooseberries. Take of sound unripe gooseberries, perfectly clean, forty pounds; water four gallons; white sugar thirty pounds; crude tarter in powder six ounces.

Bruise the gooseberries in a tub, by pressure sufficient to crush the berries, without breaking the seeds, or materially compressing the skins; pour the four gallons of water into the vessel and stir and squeeze the contents, until the whole of the juice and pulp are separated from the solid matters. The materials are then to remain at rest, from six to twenty-four hours, when they are to be strained through a coarse bag, by as much force as can be conveniently applied to them. One gallon of fresh water may afterwards be passed through the *marc*, for the purpose of obtaining all the soluble matter from the gooseberries. Dissolve the sugar in the juice thus procured, and let the total bulk of the fluid be made up with water, to the amount of 10½ gallons. The crude tartar must also be now added.

The liquor thus obtained is the artificial *must*, and is equivalent to the juice of the grape. It must be placed in a tub of sufficient capacity, over which a blanket or similar texture, covered by a board, may be thrown, the vessel being placed in a temperature varying from 55° to 60°. Here it may remain for a day or two, according to the symptoms of fermentation, and from this tub it must be drawn off into the cask, in which it is to ferment. The cask must be filled nearly to the bung-hole, that the scum which arises may be thrown out; as the fermentation proceeds, and the bulk of the liquor diminishes, the superfluous portion of must which was made for this express purpose, must be poured in, so as to keep the liquor still near the bung-hole. As the fermentation declines, the bung must be driven in, and a small hole be bored in the side of the cask, into which a wooden peg is fitted.

After a few days this peg is to be loosened, and the carbonic acid may, if any be generated, escape. This peg must be removed afterwards occasionally, for the same purpose; and, when the danger from excessive expansion is over, the peg may be permanently driven in. It may remain in this state through the winter: or it may be decanted from the first lees in December, if sufficiently fermented: and if not it may be shaken up with the lees to promote its effectual fermentation. It may be fined with isinglass

All shiftings and bottlings of such wine should be, if possible, in clear, dry, and cold weather; and in any case, it must be bottled in the month of March.

Wine from unripe Currants, the same proportions of currants, sugar, &c. are necessary as for gooseberry wine; and the same mode of proceeding in every respect.

In both these wines it may be useful, perhaps, to observe, that to insure briskness, without excessive sweetness, the proportion of fruit should be fifty pounds, and the sugar continued the same in quantity; or the quantity of sugar may be increased to forty pounds, if a very sweet, as well as a very brisk wine, be desired; and if a weaker wine be wished, twenty-five pounds only of sugar may be used in these processes.

Wine from unripe Grapes. The same proportions of grapes, sugar, &c. are necessary as for gooseberry wine. The husks of the grape may be always fermented in the vat with the fluid; and, with the exception of the seeds, no harm can arise from bruising the solid matters.

As no yeast is directed in any of these operations, we must not conclude that the fermentation will be less effectual on that account. Attention to the temperature will commonly be sufficient to excite and continue it. If, however, it should become languid during its progress, simply agitating the liquor, or omitting to replenish the vessel, so that the scum may remain in it, will generally be effectual.

Wine from the leaves of the Vine. The leaves may be taken, at any period, from vines which have been cultivated for this purpose, and from which no fruit is expected; the tendrils are also equally useful: the claret vine may be cultivated for this purpose, by which the wine will have a red colour; the leaves are best when young. Take forty or fifty pounds of such leaves, upon which must be poured seven or eight gallons of boiling water; let them infuse for twenty-four hours; the liquor being poured off, the leaves must be pressed strongly, and being subsequently washed, with an additional gallon of water, they must be again submitted to the action of the press. The quantity of sugar may be varied, as in the preceding forms, according to the nature of the wine wanted.

Wine from ripe Gooseberries or Currants, may be made either sweet or dry. If sweet wine is intended, the fruit should not exceed forty pounds; if dry wine, it may extend to sixty. The proportion of sugar must be thirty pounds as above; and, if a still stronger wine be desired, forty pounds of sugar must be used.

Wine from ripe Grapes. No water must be used in this wine. To each gallon of juice, after expression, a quantity of sugar must be added, varying from one to two pounds in proportion to the greater or less sweetness of the fruit. The remainder of the management is as before.

The proportions of *all* the preceding wines are calculated for a cask of *ten* gallons.

The wines from elder berries, raspberries, or other fruits, are to be made in the same manner, and with similar proportions.

A superior class of fruit wines is made by using the juices of all these fruits, without any water being added.

When wine is made from boiled fruits, such as black currants, it will be sufficient that the fruit is simply brought to the boiling point before using it, the water in the vessel being so managed as to avoid the risk of burning.

For the above forms of making English wines, we are indebted to the able and scientific treatise on the *Art of making wine*, by Dr. MACULLOCH.

We add the following forms for making some other wines. They have not, as far as we know, been before made public.

Raisin wine. To one gallon of water put seven pounds of raisins picked clean. Stir them three or four times a day for a month; press the liquor off, and put into it a table-spoonful of yeast. If fine in five months, it may be bottled. Of course it must be kept, during the fermentation, in a proper degree of heat.

Frontiniac wine. To ten gallons of the above must, add half a bushel of elder flowers.

Clary wine. To ten gallons of the same must, add half a bushel of clary flowers.

Sherry wine. To ten gallons of the same must, add one pound of almonds, made into an emulsion.

Port wine. To ten gallons of the same must, add six pounds of the juice or pulp of black cherries, obtained by bruising and pressing; and two quarts of sloes boiled in the wine, and pressed off.

For *Birch wine*, see BIRCH WINE.

On the value and importance of wine as aliment, it will be necessary to make a few remarks.

That *foreign* wines are superior to those made in this country, needs scarcely to be observed: and they are so, doubtless, chiefly from their fermentation being carried on in a more warm and congenial climate than our own; added to which, the grape itself is, in such climates, in its greatest perfection. The quantity of alcohol contained in different wines, may be seen under the article SPIRIT OF WINE. *Sherry* is pleasant and aromatic; *Port* is austere and bitterish, and contains a considerable quantity of tannin; *Claret* is less rough and thinner; *Hock* is acidulous; *Malaga* is sweet; *Champagne* the most acidulous; *Madeira* is a wine which is, in general, very agreeable to the stomach, but it contains less alcohol than *Marsala*, which last is one of the strongest wines. These, and a variety of others, are cordial stimulants, and, taken in moderate quantities, invigorate the system, and contribute to the general health. New wine is, however, generally less wholesome than old. *Brandy* is obtained from wine. See BRANDY.

As medicines, the chief and best wines are *Port*, *Sherry*, and *Madeira*. In most diseases of debility, these may be employed, under proper management, with great success; and in recovery from severe diseases, they afford the most efficacious means of restoring the exhausted strength. When, however, wine renders the pulse quicker than is natural, increases heat, thirst, &c. it is improper. In typhus, the proper rule is to give it till the pulse fills, the delirium abates, and the extremities become warm. A few glasses, and these even diluted with water, given in the space of twenty-four hours, will often produce all that is required from wine; but sometimes large quantities are necessary: in a case of tetanus, five bottles of Madeira were taken every day for some time, without producing the least ebriety, but, on the contrary, were productive of the best effects.

Of *English wines*, either as aliment or medicine, we cannot speak in commendation: from their containing, almost always, a portion of undecomposed sugar, they most commonly, when taken into the stomach, produce some fermentation and flatulence, which are always disagreeable; nor, indeed, are *sweet* foreign wines free from this inconvenience. The healthy and robust may be pleased with the flavour, and indulge in draughts of such wines, but the dyspeptic and valetudinarian must invariably avoid them. It is scarcely necessary to observe, that excess in wine, like that in ardent spirits, produces not only temporary intoxication, but, if persisted in, extinguishes the faculties of both body and mind, and is the parent of a long train of diseases and wretchedness.

For obviating the effects arising from intoxication from wine, see POISONS.

Wine is frequently adulterated. Some of these adulterations are not to be detected by any known means, and others only by the scientific chemist. We shall not detail these adulterations, because we should only be assisting the fraudulent. The most deleterious ingredient for such purposes is lead, and that lead is occasionally used by unprincipled persons there is every reason to believe. *A test for the detection of lead in wine,* consists of water saturated with sulphuretted hydrogen gas, acidulated with muriatic acid. By adding one part of it to two of wine, or any other liquid suspected to contain lead, a dark coloured, or black precipitate will fall down, which does not disappear by an addition of muriatic acid: this precipitate dried and fused before the blow pipe on a piece of charcoal, yields a globule of metallic lead. This test does not precipitate iron. A still more efficacious method is to pass a current of sulphuretted hydrogen gas through the wine.

For the treatment of persons who are labouring under the effects of poisonous wine, see LEAD, and POISON.

For medicated wines, see ANTIMONIAL WINE, IPECACUANHA, IRON, &c.

WINNOWING MACHINE, a contrivance for separating, by an artificial current of air, the chaff from corn after it is threshed.

The old and imperfect modes of dressing grain, either by the action of wind, operating between two doors of a barn, or by conveying the corn to the summit of an adjoining eminence, where it was winnowed by a natural breeze, is now laid aside. The winnowing machine originated, it is said, in China, thence it was brought to Holland; it was introduced into Scotland above a century ago, and is attributed to FLETCHER, of Saltown, and the ingenuity of MIEKLE, whose son invented the threshing machine. Its construction on a larger scale is, however, said to be owing to a person named Rogers, also a Scotchman.

Threshing machines have almost always a set of fanners attached to them; and some are even provided with a second pair, by which the cleaning of the grain is rendered so complete, as to require little or no dressing afterwards; but, however, the most judicious farmer will find it to his interest to give the final dressing to his grain in a deliberate manner by hand fanners.

By these machines, with the aid of riddles attached to them, all dirt, seeds of weeds, chaff, and other refuse, are separated, or blown away, and the grain parted into divisions, according to its quality, by which it is rendered intrinsically more valuable than when the good and the inferior are mixed together.

WINTER'S BARK, or *Wintera,* a genus consisting of three species, natives of South America or Polynesia, of which the *Aromatica,* a lofty evergreen forest tree, growing in the neighbourhood of the Straights of Magellan, is the chief. The bark is employed, medicinally, under the name of winter's bark; it has been found useful in scurvy and dyspepsia, being added to bitters; but it does not appear to be superior to canella alba, and is very little used. The dose of this bark in powder, when given alone, is from ten grains to one scruple. See CANELLA ALBA.

WINTER-BERRY, or *Prinos,* a genus of plants, consisting of seven species, natives of America and the West Indies, of which the two following are cultivated: the *verticillata,* or Deciduous winter-berry; and the *glabra,* or Evergreen winter-berry: they are both shrubby plants, with flowers at the end of the branches, usually blue or purple, and appearing in July and August.

Winter cherry. See CHERRY, WINTER, and NIGHTSHADE.

WINTER GREEN, or *Pyrola,* a genus of plants consisting of six species, four found wild in our own woods, one in America, and one in Europe, Asia, and America.

Another WINTER GREEN, CHICKWEED, or *Trientalis,* is a genus consisting of one species, the *Europæa,* common to our own woods, with a stem simple, leafy at the top, leaves clustered, lanceolate, very entire; flowers white.

Winter savory. See SAVORY.

WIRE DRAWING, the art of drawing out long bars of metal by pulling them through holes in a plate of steel, or other fit metallic compound.

In order that a wire may be drawn, it is requisite that the metal should have considerable tenacity. Gold, silver, iron, steel, copper, and their compounds, are most commonly used in this art. The process is very simple: a number of holes, progressively smaller and smaller, are made in a plate of steel, and the pointed end of a bar of metal being passed through them, one of them is forcibly drawn by strong pincers, so as to elongate it by the pressure arising from the reaction of the greased hole; this is the wire; it is again passed, in like manner, through another hole a little smaller; by continuing the process the wire is increased in length, and its diameter diminished. The largest wire may be nearly an inch in diameter; and the smallest we have seen was about one-thousandth part of an inch; but we are assured that silver wire has been made one-fifteen hundredth of an inch in diameter.

Wires are drawn not only round, but square, and other figures in their sector; they are also drawn grooved, so that any small part will form the pinion of a clock or watch-work.

As the violent action of the drawing-plate renders the wire hard and brittle, it is necessary to anneal it several times, during the course of drawing. See METALS.

WISH, an inactive desire. See WILL.

WIT, an indefinite term in polite literature, but implying, most commonly, that display of talent which excites strongly our attention, is accompanied with agreeable emotions, and at the same time also with vivacity; but for ideas to be witty, it is not necessary that they should be always either correct or true: hence the manifest difference between wit and wisdom; and hence wit may be employed in a bad, as well as a good sense; wisdom never but in the last. Whatever may be thought of the scintillations of wit, unless they are employed to *please,* and *not to wound,* they should be discountenanced and avoided. See PUNNING, RIDICULE, and SATIRE.

Withers. See FISTULA of the WITHERS.

WITHERITE, a native carbonate of barytes, found in various parts of England and Wales.

Withy. See WILLOW.

WOAD, or *Isatis,* a genus of plants comprehending four species, all European plants: one, the *Tinctoria,* or Common woad, found wild in our fields, but often cultivated for the dyer; see DYEING. The specific characters of this plant are:—root-leaves crenate; stem-leaves arrow-shaped; silicles rather obtuse downy; another variety with the root-leaves obtuse and entire.

Woad is a valuable dyeing drug, the use of which has, however, been considerably superseded by indigo. It gives a full bodied and very fast blue to wool, though not very bright, so that it is always mixed with indigo at present.

In the cultivation of this plant, a rich deep and fresh soil is the best, the quantity of seed per acre varies; in the broad-cast method, six bushels are sometimes used; but by the drill method, a much less quantity will be sufficient. The seed may be sown according to circumstances, from the end of February, to the middle of May; and sometimes even as late as June, July, or August. The after-culture of this crop requires repeated hoeings. In the spring-sown crops, the leaves are generally ready to be gathered towards the latter end of June, or beginning of July. But when put in at a later period of the preceding summer, the crops are often fit to be gathered earlier. This work should, however, always be performed as soon as the leaves are fully grown, while they retain their perfect green colour, and are highly succulent: for when they begin to turn pale, much of their goodness is expended, and they become less in quantity, and of an inferior quality.

The leaves are gathered by the hand; and the plants will sometimes afford two or three gatherings. After the leaves are gathered they are submitted to the action of mills, similar to those employed for grinding bark, and in which they are reduced to a kind of pulp; the woad is then laid in small heaps, which are closely and smoothly pressed down. As often as the crust formed on the outside cracks, or separates, it is again closed, to preserve the strength of the colouring matter. In this state it remains for a fortnight, at the expiration of which, the heaps are broken up; the external part is worked into a mass, and the whole is formed into oval balls, either by the hands, or by means of moulds. The balls are now exposed to the sun, under shelter; when perfectly dry, they are ready for sale or for use.

Wolf. See Dog.

WOLF-FISH, or *Anarchias*, a genus of fishes consisting of three species, all inhabitants of the Northern Seas, characterized by a round blunt head; fore-teeth in each jaw conic, large, divergent, six or more; body roundish; they are the following: the *Lupus*, or Ravenous wolf-fish, in length fifteen feet, a most fierce and ravenous fish, fastening on any thing within its reach; feeds on small shell-fish, which it grinds to pieces with its teeth, swallowing shells and every other part; the grinders are often found in a fossil state, and are called load-stones; flesh good, but not often eaten. The *Minor*, or Less wolf-fish, has large eyes near the top of the head, resembling those of a dog; mouth large; three sharp, strong, unequal teeth on each side of the jaw. The *Pantherinus*, or Panther wolf-fish, has the body covered with round brown spots; three feet long.

WOLF'S APPARATUS, in chemistry, an apparatus for saturating water with gases, which are easily soluble in that fluid, as well as for other purposes. It consists of a tubulated retort, communicating with a receiver, which communicates with two three-necked bottles, by bent tubes, the middle neck of each of these bottles being furnished with a safety tube. The different joints are secured either by grinding, or by well-cut corks, rendered tight by a mixture of drying oil and pipe-clay.

WOLF'S-BANE, Monk's hood, Aconite, or *Aconitum*, a genus of plants, mostly natives of the Alps, the mountains of Germany, Austria, and Tartary. The following are cultivated; the *lycoctonum*, or Yellow, the *altissimum*, or Greatest yellow, the *variegatum*, or Lesser, the *anthora*, or Wholesome, the *napellus*, or Common, the *pyramidale*, the *alpinum*, or Large-flowered, the *pyrenaicum*, or Pyrenean, the *cammarium*, and the *orientale*, or Eastern monk's hood. All these require a cool shady situation except the *anthora*. They thrive better in a moist than a dry soil; they may all be propagated by sowing their seeds in autumn, upon a North border, where they are screened from the sun. They are most of them ornamental flowers.

Of the *Napellus*, or Common monk's hood, several varieties with flowers of white, yellow, or blue, are found in our gardens. The leaves of this species are ordered by the London college for medicinal use; but the Dublin college orders the leaves of the *Neomontanum*, another species; which last is now considered as that which ought to be employed. The leaves should be gathered when the flowers appear.

The whole of the plant is poisonous; but the deleterious qualities are lost in a considerable degree when dried. It is narcotic, diaphoretic, and, in some cases, diuretic. In over doses, it produces violent nausea, vomiting, excessive purging, vertigo, cold sweats, mania, and death. It has, however, when judiciously administered, been found useful in chronic rheumatism, gout, enlargement of the bones, paralysis, and scirrhus, as well as in amaurosis, scrofula, &c.; it is given in the form of powder, extract, and tincture, and may be combined with calomel, antimonials, camphor, and guaiacum. The dose of the powdered leaves is from one to two grains, gradually increasing it to six or eight. The *extract* is made by bruising the leaves in a stone mortar, sprinkling over them a little water, expressing the juice, and without any depuration evaporating it to a proper consistence. Its medicinal properties are the same as those of the leaves; the dose should be at first half a grain, gradually increased to six, taken night and morning.

Of these medicines we can only say, that too much caution and circumspection cannot be adopted in their administration, and that the domestic prescriber ought, perhaps, scarcely to administer them at all.

For the treatment of persons who have taken wolfs-bane in an over dose, or as a poison, see POISON.

Wolfram. See TUNGSTEIN.

Wolverene. See URSUS.

WOLVES-TEETH, in horses, teeth that grow in such a manner that their points prick or wound either the tongue or gums in eating: old horses are most liable to this peculiarity. To remedy it, some chip off the superfluous parts of the teeth with a chisel and mallet; but filing them down is esteemed the best way.

WOMAN. We have anticipated what we have to say concerning this important character of society under the heads HUSBAND and WIFE, INFANCY, LOVE, MARRIAGE, MOTHER, &c. to which the reader will refer. We may, however, add here, notwithstanding the sneers of the malevolent and the mistakes of the unthinking, that in the formation of the human character more depends upon the mind and manners of the female than is commonly believed; and that man owes to woman some of the most exquisite mental pleasures which he enjoys upon the earth. In prosperity, the society of woman furnishes a zest, without which, many a pleasure loses half its gratefulness; and in adversity, woman is our solace and our support. A modern poet has thus forcibly apostrophized the female sex.

O woman! in our hours of ease,
Uncertain, coy, and hard to please,
And variable as the shade
By the light quivering aspen made;
When pain and anguish wring the brow,
A ministering angel thou!

WALTER SCOTT.

WOMBAT, a species of Opossum peculiar to New South Wales; it is without a tail; length about two feet two inches. It has no pouch: a variety of this species of whose flesh the natives are very fond.

WOOD, or *Lignum*, the hard and fibrous substance of plants, concerning the growth of which, and its properties as timber, the reader may turn to PLANTATION, TIMBER, VEGETATION, &c. We shall here only treat of the methods of hardening and colouring wood.

To harden wood for making pulleys. After finishing the pulley, boil it seven or eight minutes in olive-oil, and it will become as hard as copper.

To prepare green wood so that it may not split in turning. Having cut the wood into pieces of a proper size, put it into a vessel full of ley, made with wood-ashes. Boil it there about an hour; remove the cauldron from the fire, and when the ley is cold, take out the wood and dry it in the shade.

To give an ebony black to hard and fine wood. Rub the wood, previously made of the shape intended, with aquafortis, a little diluted. Small threads of wood will arise in the drying, which must be rubbed off with pumice-stone. Repeat the process again, and then rub the wood with the following composition: put into a glazed earthern vessel four ounces of sulphate of iron, and a pint of water, having half an ounce of borax, and as much indigo dissolved in it; let the whole boil till a froth arises. Rub several layers of this upon the wood; and when it is dry, polish it with leather and tripoli.

To give plum-tree the colour of Brasil wood. Slack lime with urine, and daub the wood over it while it is hot; allow it to dry; then take off the coat of lime and rub it with chamois skin, well-oiled. Or, steep the wood in water having a quantity of alum dissolved in it; let it be kept lukewarm, and let the wood remain in it five or six hours; when it is dry, rub it as before, with chamois-skin well oiled.

To make new mahogany of a dark colour. Make a paste with quick-lime and water; rub this paste over the mahogany; and the colour will be darker in proportion to the quantity used and the time which it is suffered to remain upon it: a few minutes will often be sufficient.

To give a fine black colour to wood. Steep the wood for two or three days in lukewarm-water, in which a little alum has been dissolved: put a handfull of logwood chips into a pint of water; boil it down to six ounces; a little indigo being added will make the colour more beautiful. Spread a layer of this liquor quite hot, on the wood with a pencil, which will give it a violet colour; when dry, lay on another layer, and also a third; then boil some verdegris in vinegar, and spread a layer of it on the wood; when dry, rub it with a brush, and then with oiled chamois-skin.

To stain wood blue. Take two drachms of indigo in powder; put it into a glass with two ounces of sulphuric acid: stir them with a clean tobacco pipe; after standing 12 hours mix a sufficient quantity of water with it to give the required colour.

To stain wood green. Dissolve verdigris in distilled vinegar, or in aqua-fortis diluted with 15 or 20 times its weight of water; apply the solution to the wood previously warmed.

To stain wood a purple. Take logwood chips one ounce; of Brazil wood two drachms; boil them together in a quart of water, over a slow fire; when one half of the fluid is evaporated it must be strained, and several times laid on the wood with a proper brush, till it has received a dark red shade. After it is perfectly dry, draw over it repeatedly a weak solution of the purest pearl-ash, namely, one drachm in a pint of water; the colour will then become, if the liquids have been dexterously applied, a fine purple.

To stain wood red. Take of Brazil wood and of pearl-ash, of each two drachms; mix them in a quart of water; let the mixture stand in a warm place for several days, stirring it occasionally. When the colour is sufficiently extracted, the coloured liquor must be moderately warmed, and in that state applied to the wood as many times as may be necessary to give it the desired colour. Next a solution of alum in the proportion of two ounces to a quart of water, is to be laid on the wood, while it is still wet with the former stains, with a soft brush. The wood may be afterwards polished or varnished.

To stain wood yellow. Take one ounce of turmeric root in powder; rectified spirit of wine one pint; digest them, shaking daily, for a week, in a stopped bottle; then decant the liquor and lay it on repeatedly, as may be found necessary. Or wood may be stained yellow by applying weak aqua-fortis to wood previously warmed, and immediately after the stain is given it should be held at some distance from the fire till it acquire the desired tint.

A cement for stopping cracks in wood. Take pitch, bullock's blood, linseed oil, turpentine, and the finest brick-dust, melted together in an iron pan. Small chinks may be filled with this substance whilst it is hot; larger ones should have tow or oakum previously stuffed into them; and it is of importance that the wood be thoroughly dry, or the composition will not stick.

Woodbine. See HONEYSUCKLE.

Wood chat. See SHRIKE.

Woodcock. See CURLEW.

Wood Lark. See LARK.

WOOD-LOUSE, MILLIPEDES, or *Oniscus*, a genus of apterous insects, comprehending forty-three species; they are distinguished by having fourteen legs, setaceous antennas, from two to four, body oval, consisting of about fourteen transverse segments; jaw truncate, denticulate. They are divided into,—feelerless; antennas often four, sessile; thirty-eight species, ten of which are common to our own country;—feelers unequal, the hind ones longer; antennas filiform; three species of these common to our own country. Some of this genus are aquatic, others terrestrial. The sea species are larger than those of fresh water. The following are the chief:

The *Aquaticus,* inhabits England and Europe, generally in stagnant waters; size and colour of the common wood-louse, but longer. The *entomon* is the largest insect of the tribe, measuring two inches in length, and in its general form resembles the wood-louse: found in the British and European seas, about rocks. The *asellus,* or Wood-louse, is too well known to need description; when disturbed it rolls itself up like a small shot; found in great abundance in this country, and Europe generally. The *armadillo* is somewhat longer than the preceding. Some of these species were formerly in the materia medica, but are deservedly neglected.

Wood of Life. See LIGNUM VITÆ.

WOOD-PECKER, or *Picus,* a genus of birds comprehending fifty-eight species, scattered over the globe, chiefly inhabitants of America; five or six of our own country; they are distinguished by a straight bill, and climbing up and down trees in search of insects; many of them also make large holes in trees, employing the cavity for their nests. The following are the chief:

The *Martius,* or Great black woodpecker, is black, cap vermilion; inhabits our own country, and Europe generally; found also in Chili; length from seventeen to eighteen inches; these birds strike with such force against trees which they excavate, that their noise is heard as far as a wood-cutter's hatchet; lays two or three white eggs; feeds chiefly on bees and ants; in winter this bird disappears. In the female the hind head only is red.

The *Principalis,* or White-billed woodpecker is black, crest scarlet; bill white as ivory: cap in the female not coloured; sixteen inches long; inhabits America from New Jersey to Brazil; habits like the last species; called by the Spaniards, from the great quantity of chips which it makes, the *carpenter's bird.*

The *Erythrocephalus,* or Red-headed woodpecker, has the head wholly red; wings and tail black; belly white; female head brown; nine and a half inches long; habits like the last; found in North America; in the winter grows tame, and enters houses, like the redbreast; migrates; feeds on acorns, fruits, and Indian corn.

The *Auratus,* or Golden-winged woodpecker, inhabits North America, and is very variegated in its plumage; eleven inches long; migrates to Hudson's bay; feeds on worms, &c.; does not climb trees.

The *Viridis,* or Green woodpecker, is green, crown crimson; another variety with the upper part of the head, and spots beneath the ears, deep red. The first variety is found in Europe and our own country; the second Mexico; thirteen inches long; makes a circular hole in the dead parts of trees for its nest; eggs five or six, greenish, spotted with black; fond of bees.

The *Pubescens,* or Downy woodpecker, has the back longitudinally downy; outer tail feathers white, with four black spots; hind head red in the male; inhabits North America in vast flocks; is bold, and very injurious to orchards, by piercing and destroying the trees; size of a sparrow.

Wood Pigeon. See PIGEON.

WOODROOF, or *Asperula,* a genus of plants containing eleven species, chiefly natives of Europe; two, the *odorata* and *cynanchia,* natives of our woods or sunny banks, but of no importance.

WOOD-SORREL, or *Oxalis,* a genus of plants comprising ninety-four species, almost all natives of the Cape; a few of South America and the West Indies; one, the *Sensitiva,* with yellow corol, stemless, of the East Indies; and one, the *acetosella,* of the wet woods of our own country. They are thus subdivided:—leaves simple,—leaves in pairs,—leaves ternate; scape one-flowered,—leaves ternate; scape more than one-flowered,—leaves ternate; peduncles one-flowered; stem naked towards the bottom,—leaves ternate; peduncles one-flowered; stem leafy,—leaves ternate, peduncles more than one-flowered, with a stem,—leaves in finger-like directions,—leaves pinnate. The species chiefly cultivated are the following:

The *Acetosella*, or Common, the *striata*, or Upright, the *caprina*, or Goat's foot, the *versicolor*, or Stripe-flowered, the *purpurea*, or Purple, and the *incarnata*, or Flesh-coloured wood sorrel.

The first sort may be readily increased by planting the divided roots in a moist shady border, in the early part of the spring. The leaves arise immediately from the roots, upon single long footstalks, and are composed of three heart-shaped lobes; they have a pleasant acidulous taste; the flowers are flesh-coloured, streaked with red. The expressed juice reddens vegetable blues; its active principle is super-oxalate of potash, which is obtained crystallized from the expressed juice, and sold in the shops mixed with an equal portion of cream of tartar, under the name of *essential salt of lemons*. The same salt may be formed by cautiously dropping a solution of potash into a saturated solution of the oxalic acid, obtained from sugar by the action of nitric acid; the super-oxalate precipitates as soon as the proper quantity of alkali is added.—See OXALIC ACID.

This species is refrigerent and antiseptic; boiled in milk it forms a pleasant whey, which may prove useful in fevers; as may also the expressed juice, and the super-oxalate; but their places are well and commodiously supplied either by lemon juice, or the citric acid dissolved in water. The recent herb, eaten as a salad, may be useful in scurvy.

All the other sorts, which are bulbous rooted, may be increased by planting offsets from the bulbs which issue from the sides of the stems, in pots filled with good light mould. They require protection in the winter.

Woody night-shade. See NIGHT-SHADE.

Woof. See LOOM.

Wool. See BREEDING and SHEEP.

Woollen. See DRESS and FLANNEL.

Work. See LABOUR.

Workhouse. See COTTAGE, COTTON-MILLS, EMPLOYMENT, HOUSES OF INDUSTRY, and POOR.

Wootz. See STEEL.

WORM, or *Vermis*, in natural history, a term applied to animals of different sizes, forms, and colours; worms have commonly a body more or less elongated; they are also generally round; but are sometimes flat, as the tape-worm.

For the general arrangement of worms, see ZOOLOGY; and for various worms, see ASCARIDES, BLIND-WORM, EARTH-WORM, GUINEA-WORM, HAIR-WORM, SILK-WORM, TAPE-WORM, &c. in the order of the alphabet. For GLOW-WORM, see FIRE-FLY.

Worm-bark. See CABBAGE-TREE BARK.

WORM-GRASS, or *Spigelia*, a genus of plants consisting of two species, as follow:

The *Athelmia*, has an herbaceous stem, upper leaves in fours; a native of the West Indies, and formerly employed as an anthelmintic, though probably inferior to the next species.

The *Marilandica*, Perennial worm-grass, or Indian pink, has a square stem, leaves opposite, sessile, entire; flowers large, bright red on the outside, deep orange within; a native of the warmer parts of North America. The root, which is preferred to the leaves, is purgative and anthelmintic. When in a recent state, and given in small doses, it occasionally produces giddiness, dimness of sight, and even convulsions; in larger doses its cathartic properties appear to prevent such unpleasant effects. It has been found most powerful in expelling the *lumbrici*, or long round worms, found in the human intestines. An emetic is sometimes previously given to the use of it, but we do not think this in general necessary. To aid its purgative operation, two or three grains of calomel, or eight or ten of rhubarb, are sometimes added; but for children an addition of senna is often advantageously made. The root may be given in substance, or in the form of aqueous infusion. The dose of the pulverised root is from ten grains to one drachm, every night and morning till the worms are expelled.

Worm seed. See MUGWORT.

WORMS, or *Vermes*, those animals which infest the human intestines, producing many unpleasant symptoms; they are of various kinds: the ascarides, of which two species are well known, one the small round white worm, about half an inch long; and another a round long worm, about nine inches or more in length, see ASCARIDES; the tape-worm, see TAPEWORM; and another, the long thread-worm, or hair worm; the *trichocephalus hominis*, which is about two inches long, and in colour resembles the ascarides.

The small ascarides are usually seated in the rectum; the larger, long, round worms, are found, for the most part, in the upper small intestines; but they are also sometimes lodged in the stomach, and various other parts of the intestinal canal; the tape-worms generally possess the whole tract of the intestines, but especially the ileum.

The symptoms of the presence of these different worms are by no means so distinctive as could be desired. The small ascarides frequently produce uneasiness in the rectum, and sometimes an intolerable itching at the anus, with tenesmus. They are also frequently voided with the fæces. The long round worms produce nausea, vomiting, looseness, fainting, a slender, intermittent pulse, itching of the nose; epileptic fits, hunger, paleness, weakness, costiveness, swelling of the abdomen, startings and grinding of the teeth in sleep; and, more especially, a fetid breath, and sudden gripings about the navel. These worms are also frequently voided by the mouth and anus. They are generally considered the most dangerous worms which infest the human body; sometimes perforating the intestines.

A distinctive symptom of the tape-worm, besides being accompanied by most of the preceding, is said to be a weight in the belly, as if a ball were rolling about in it. But many of the symptoms here enumerated belong also to other diseases.

All ages, and both sexes, are liable to worms. Various remedies offer for the expulsion of these troublesome animals. Bear's foot, calomel, Indian pink, cow-itch, powdered tin, cabbage-tree bark, Ethiop's mineral, wormwood, oil of turpentine, and most active purgatives, such as jalap, scammony, aloes, &c. &c. The mode of administering these will be found under the respective heads. Clysters, consisting of strong solutions of common salt in water, with a few ounces of olive-oil, have also been recommended. Perhaps calomel and jalap, properly combined, offer one of the most effectual remedies for most worms; upon the proper combination and use of these, the well known CHING'S lozenges depend. See QUACK MEDICINES. See also our article MATERIA MEDICA, under the head *anthelmintic.* But for the tape-worm it is now, by undoubted experience, found that oil of turpentine is the best remedy. See turpentine. To promote the general health, preparations of iron, Peruvian bark, and a generous diet, (see ALIMENT, APPETITE, &c.) will be necessary.

Infants are seldom troubled with worms till they are weaned. The chief symptoms are rubbing the nose and grinding the teeth: active purgatives, as jalap and calomel, are a powerful remedy; but it should be administered with great caution. The compound decoction of aloes (see BAUME DE VIE) is also often useful; bear's foot is also an effective but a dangerous medicine.

We cannot sufficiently caution our readers against the quackery too commonly practised in the administration of worm-medicines; and, in all serious complaints of this kind, we advise recourse to a physician.

WORMS OF HORSES. In addition to what we have said under the article BOTTS, it should be mentioned here that the oil of turpentine has been lately given for the expulsion of these animals with great success. The horse must first be given a mild laxative; when the bowels are relaxed, four ounces of oil of turpentine are to be given in a pint of gruel; the horse should have but little food for a few hours either before or after; but lukewarm water may be frequently given.

WORMING, an operation performed on puppies, under the impression that it prevents them from biting, should they become mad. It consists in making an incision under the tongue, and drawing out with a hook, a small worm-like ligament. We believe it to be altogether a useless and unnecessary operation.

Wormwood. See MUGWORT.

WORT, an infusion of malt, which has been found useful in the cure of scurvy. It is usually prepared for medicinal purposes, by infusing one measure of ground malt in three measures of boiling water. The mixture must be well stirred, and left to stand covered for three or four hours. It should be made fresh every day. From one to four pints daily, has been generally directed. Its general effects are to keep the bowels open, and to prove strengthening and nutricious. But in order that it may produce advantageous results, it must be taken in large quantities, and for some time, rather as an article of diet, than as a medicine. See SCURVY.

WOUND, in surgery, has been defined a recent and violent separation of any soft external part of the body, attended with more or less effusion of blood. But in popular language, many ulcers are called wounds. See ULCERS.

In a work of this nature, it will be impossible that we can treat of every kind of wound to which the human body is liable, but as recent wounds arise, for the most part, from accidents, we shall direct the reader's attention to those which are most common. And here, as in other accidents, *presence of mind* is of essential importance.

Were a knowledge of the situation of the blood-vessels, of the extremities, and the use of the tourniquet, more general, it could not fail of proving highly beneficial to mankind.

The vessels, or tubes, which proceed *from* the heart to convey the blood to all parts of the body, are called *arteries.* From the power with which the heart propels the blood through this system of vessels, it happens that, whenever they are wounded, the blood flows rapidly and in jerks from the wounded part. They divide to be distributed to parts from the trunk, like the branches of a tree from the body; so that, on pressing together the sides of any trunk, the flow of blood into the branches, beyond the compressed part, is prevented.

The vessels which return the blood *to* the heart, are named *veins.* In these, the blood receives but little of the impelling force of the heart, and, therefore, it moves much more slowly than in the arteries; and, of consequence, wounds of the veins are not of much importance: a small degree of resistance by a finger, or some folded linen, applied to the wounded part, will generally stop the bleeding.

Hence, if a bandage, or ligature, be made sufficiently tight around any limb, the flow of blood into all the parts below must be prevented. But to render this certain, the pressure must be very great in the whole circumference of the limb; and in some cases, from the situation of the arteries between bones, the effect cannot be obtained. To perform this process successfully, in cases of wounds and operations, and at the same time to prevent the consequences of an exceedingly strong *general pressure,* surgeons have fixed on certain parts of the trunks of arteries before their ramifications, for the application of a pad, or COMPRESS.

The pulse is the beating or distending of an artery from blood propelled into it by the heart. The spaces of time between the pulsations are periods when the heart itself is filling with blood returned to it by the veins. Now, it is evident, that there can be no pulsation when the flow of blood and pulsation of an artery are prevented. Where then the pulse can be conveniently felt, as at the wrist, the ceasing of it, from a pressure being made upon the trunk above, will prove that the pressure is made effectually. To illustrate this, let a friend feel the pulse in your wrist; then apply two or three fingers in the *little pit immediately below the collar bone, close to the shoulder.* Press strongly and the pulse will cease, because the artery which supplies the upper extremity *passes under the collar bone, over the first and second ribs along this part,* and will now be pressed against one of these ribs. Remove the fingers and again apply them, and the pulse will be found to alternate with the pressure.

Suppose then a wound to be received, an artery of considerable size to be cut or torn, and a copious bleeding in consequence to happen in any part of the arm, below the place just described: it is manifest that by making a pressure with the fingers, in the manner described, or assisted by a pad between the fingers and the part, the bleeding would instantly cease.

The arteries of the upper extremities, or arms, proceed from the trunk after this manner: *the trunk passes into the arm-pit, deeply situated, it then proceeds along the side of the arm, next the body, obliquely towards the fore-part of the elbow-joint, or bend,* and here divides into three branches. In this course to its division, it lies near the bone, and may, therefore, be successfully compressed.

The distribution of the vessels of the lower extremities is in this way: the artery passes the cavity of the belly to the *groin*, where, in thin persons, the pulsation of it may be felt. At this place, in case of wound, and effusion of blood, very high in the thigh, effectual compression may be made by some fingers pressed very strongly in the manner described for compression below the collar-bone, although a strong pad, or other firm body, interposed between the fingers and the parts will be better. From the groin, the artery proceeds in an oblique direction downwards, and inwards, and at about the middle of the inside of the thigh, it lies close to the bone. This is the most favourable part for making a pressure upon it, because of the resistance of the thigh-bone behind. And when there are opportunities of choice, as in cases of wounds or operations *below* this part, this is the place which surgeons fix on for the application of the compressing body; it therefore deserves particular attention.

The course of the vessel is then *downwards and backwards to the ham;* in the *hollow of which, against the lower flat end of the thigh-bone,* compression may again be very successfully made, in all cases of wounds or operastions below the knee-joint. But *beyond* this part, compression must not be depended on: for immediately below the joint, the artery divides like that of the upper extremity into three vessels, which are situated between the bones of the leg.

Now, suppose a wound to have happened by a pen-knife, or other thing, in the thigh leg, or arm, and a large artery being punctured, a violent bleeding should ensue. You have no tourniquet, but you clearly understand what has been taught on this subject.—How would you act?—Undoubtedly, you would instantly pull off your garter or take the first piece of string or cord you could find, roll up your handkerchief hardly, and lay it on the trunk of the artery above the wounded part; pass the garter or cord over the handkerchief round the limb: tie a knot leaving a proper space; and then twist the ligature by a piece of stick or cane, or any other firm body which you could procure.

It sometimes happens that, after bleeding in the arm by the regular surgeon, the blood will continue to flow. In such accidents, the simple principle, with which the mind should be fully possessed is, that the blood must cease to flow if the orifice be closed. To accomplish this, let the thumb be slid on to the orifice so as to bring its sides together, and to press it with a moderate force. The flow of blood will now be stopped; a little bolster of linen, folded by some by-stander, must be carefully introduced between the orifice and the thumb; over this must be placed another compress, of sufficient thickness to fill up the hollow of the bend of the arm, confining the whole with a riband or tape, passed over the compress, and above and below the elbow, in the form of a figure of eight, finishing with a knot over the compress.

The preceding directions are, of course, applicable to the prevention of the great effusion of blood from innumerable kinds of wounds; the danger, however, under such circumstances, depends also on the part which is injured, and on the constitution of the patient. If the heart, any of the large internal blood-vessels, the spinal marrow, or the brain be wounded; or when any large nerves, ligaments, or tendons are materially injured, the danger is always imminent, and a skilful surgeon should, by all means, be consulted; indeed, the safest course is always to obtain the best medical attendance. We have mentioned, under our article blood letting, our opinion of this operation, and by whom it ought to be performed; and, doubtless, in wounds and bruises, from accidents, when the effusion of blood is not great, the abstraction of a few ounces of this fluid may be very useful, to guard against any inflammation; or if this should not be adopted, a dose of opening medicine, such as Epsom, or Glauber's salts, will be generally necessary, unless the great loss of blood, and weakness of the patient, should forbid.

The applications to wounds must depend, in some degree, upon their nature. In simple wounds from keen instruments, in general, nothing more is necessary, than a moderate pressure, or bandage of dry lint or calico, upon the part, as mentioned under *cut of the finger*, taking care, of course, in covering it from the external air, that no extraneous bodies remain in it: for it sometimes happens, that such bodies however small, prevent their healing. If a considerable laceration of flesh should occur, it will be sometimes necessary to sew it up, but this is most appropriately done by the surgeon; or gold beater's skin, or common sticking plaster, instead of lint, may be sometimes advantageously applied. When the bleeding does not readily cease by moderate pressure of lint, it may be dipped in the compound tincture of benjamin, or dusting the part with fine flour, or gum Arabic in fine powder, may, perhaps, answer as well.

It is scarcely necessary to observe that all foreign bodies, such as iron, lead, splinters of wood, glass, &c. &c. should, if possible, be speedily removed or extracted from wounded parts; but if this cannot be done, the part may be exposed to the steam of hot water, or an emollient poultice should be applied, in order to induce early suppuration, and, of course, an ejection of the offending body; or it may be, and often should be, extracted at once by the skilful surgeon.

It is a mistake to suppose that ointments are at all necessary to be applied to recent wounds; in general in these, if the air be excluded, nature will effectuate the cure best by being left alone. But if swelling, or other untoward symptoms come on, the bandages must be loosened; and should all inflammatory symptoms have subsided, and the wound shew no disposition to heal, it must then be treated as an ulcer, and perhaps yellow basilicon, tar ointment, with or without calomel, or red precipitate, according to circumstances, may be necessary. And sometimes, where there is considerable swelling and pain, a bread and milk poultice, or even the more powerful poultice, mentioned under *abscess*, may be necessary.

The diet, in all serious accidents of this kind, should be wholly of the vegetable kind for some days, till all danger from any inflammatory diathesis has subsided. Gruel, barley water, panada, and acidulous drinks, should form the chief aliment. Animal food, or broths made from it, should be totally prohibited.

In *gun-shot wounds*, whatever is of a hot or spirituous nature, is extremely injurious on these occasions, and what no wounded part can in any degree bear. The wound may be dressed with pledgets of any emollient ointment; the whole being covered with a common poultice; or, in some cases, preparations of lead may be used. An opiate may also be necessary; and the part affected being placed in the easiest and most convenient posture, the patient should be laid to rest. The formation of matter in every contused wound, is an object of the first importance: for, till this takes place, there is every reason to suspect that gangrene may happen. To hasten suppuration, the warm poultices should be frequently renewed, and they should be continued till the tension and swelling are removed; and till the sore has acquired a red, healthy, granulated appearance, when it is to be treated as a common ulcer.

Persons wounded by *gunpowder*, especially in the face, should not attempt to extract such particles of the powder as have penetrated through the skin; because they are apt to break and sink deeper into the muscular fibres; the best application is Goulard water; (see Lead,) or a liniment composed of linseed oil and lime water. See Burns.

In the treatment of all wounds, rest and an easy posture of the wounded part, are absolutely necessary. And where there is considerable prostration of strength, notwithstanding what we have said above, animal food and other stimulants will also be necessary.

For the treatment of wounds which are become gangrenous, see Gangrene, and Mortification.

As a conclusion on the subject of wounds from accidents, we add the following observations. They are indeed equally appropriate to our articles *Bruises* and *Fractures*, but they are certainly not less so here.

If in consequence of a fall from some high place, or by any other accident, a considerable degree of injury appears to have been received, the sufferer being unable, in consequence of the deprivation of his senses, to point out the injured part, some consideration and attention is necessary, before any attempts are made even to raise him from the ground. Should the fracture of one of the bones, either of the upper or lower extremity, have happened, and not be suspected by the assistants, their exertions to raise him, and to place him on his feet, might force the fractured ends of the bone through the soft parts, and convert a mere simple fracture into a very dangerous and compound one. The limbs, therefore, with a view to this circumstance, should be carefully examined; but even if they appear to have suffered no material injury, yet the patient should not be precipitately raised, until something be provided on which he may be placed. As it will be fair to conclude, from the deprivation of his senses, that the brain may have sustained some injury, great care should be taken, that whilst he is conveying to his apartment, and whilst lying on the bed, the head be kept moderately raised; and on no account whatever should any spirituous drinks be given him.

Should a leg or thigh be broken, the aid and directions of a surgeon should, if possible, be obtained, for his removal; but if this cannot be the case, the following rules should be observed. First, if any blood vessel be wounded, and a considerable effusion of blood has taken place, this must, if possible, be further prevented by some of the means mentioned above; and that he be not stirred until a proper vehicle is procured, on which he can be placed. This, if nothing more proper can be had, may be a door, a shutter, or two or three planks well secured together. To place him on this, two persons may raise him by means of a sheet slid under his hips, whilst one or two raise him by the shoulders; one person raising the sound leg, and one, the most intelligent of his friends, conducting the fractured limb; in moving which, great care must be taken that the divided pieces of the bone be kept as much as possible in the same line, lest the fractured ends pierce through the soft parts. If a pillow can be obtained, the broken limb should be placed on it; and, if it appear to be preferable, previous also to his being raised. When placed on the litter, he should be a little inclined to the same side of the injured limb, which, if circumstances will admit, should also be laid on the side, and with the knee a little bent. The best mode of conveyance is, undoubtedly, by two or four men in the manner in which a sedan chair is carried. A mattress, or boards, if a mattress cannot be had, should be laid under the bed upon which the patient is placed.

If the arm be broken between the elbow and the wrist, the arm should be bent at the elbow, raising the palm of the hand to the breast, with the fingers moderately bent; the thumb being above, and the little finger below. In this state it may be retained by a sling or handkerchief, supporting it from the elbow to the fingers' ends.

When the arm is fractured between the wrist and the shoulder, the fore arm may be placed in the same position as already described; but the sling, instead of supporting the whole length of the arm, should only support the hand, which should be raised higher than in the former case, the elbow being allowed to sink; its motion, however, being prevented, by a handkerchief passed moderately tight round the trunk, including the fractured arm.

WOUNDS of Horses, and other Animals, require, in general, the same treatment as those of the human subject. They may, however, be divided into the simple incised wound, made by a clean cutting instrument; the lacerated and bruised wound; and the punctured wound.

Before a wound is dressed it should be carefully cleaned; and if made with a clean cutting instrument, without any laceration or bruising, the divided parts, if necessary, should be brought together and secured by sewing; or, sometimes, sticking plaster may answer the same purpose; particularly where the situation of the part admits the application of a bandage.

In extensive wounds, where fever and inflammation threaten, bleeding and purgatives are necessary; and the only application to the wound, under such circumstances, should be an anodyne fomentation. Stimulating fluids, such as a solution of white or blue vitriol, or diluted spirit, will sometimes be necessary, to increase the disposition of a wound for healing; but stuffing tents into the wounds of horses is a bad practice, and scarcely at any time to be commended. In very deep wounds, sewing them up is not so useful as a bandage. When the bone is injured, the cure of wounds is often tedious; and it is of little use to heal the surface whilst the injury beneath remains.

Wounds of the joints are the most serious. It may be known when a joint has been opened, by the synovia or joint oil flowing from the wound, it being a yellowish, transparent, slippery fluid. The actual cautery is the best remedy, and should be applied thus: the instrument most proper for the purpose is made of iron, two feet in length, rounded at the extremity, about the size of a small button, and with a wooden handle. The temperature of the iron should be moderately red; it being not so hot, or much hotter, will be equally improper; it is often necessary to apply the cautery two or three, or more times; the application of the cautery should be confined to external soft parts, avoiding the ligaments of the joints. Various other wounds of the chest and abdomen yield to the actual cautery; and so also does what is termed a bad neck from bleeding.

Wounds of arteries may be sometimes stopped by pressure; but, at other times, it is necessary to enlarge the wound, so as to get at the bleeding vessel, which should be tied both above and below the wound with strong packthread. In stopping the flow of blood from veins, the actual cautery is often the most effectual remedy.

In wounds of horses indisposed to heat, green basilicon is often a very useful ointment. See **Fistula**, **Over-reach**, **Pricking**, &c. &c.

WOUND-WORT, or *Stachys*, a genus of plants, consisting of twenty-six species, scattered over the globe; four common to our own country; these are the following: the *sylvatica*, or Hedge nettle; the *palustris*, or Clown's All-heal; the *germanica*, or Base-horehound; and the *arvensis*, Corn-stachys, Petty iron-wort, or All-heal; but none of them is deserving particular notice.

WRASSE, or *Labrus*, a genus of fishes comprehending seventy-two species, inhabiting different parts of the globe; they may be subdivided into,—tail forked,—tail entire,—the last comprehending by far the greater number: the chief species are the following.

The *Tinca*, or Old wife, has the upper jaw turned up; tail rounded; mouth able to be drawn in or protruded; grows to five pounds weight; varies much in its colour, sometimes dirty red, sometimes beautifully striped: feeds on shell fishes; inhabits deep waters on the British coasts.

The *Ballan*, or Ballan wrasse, has the body yellow, spotted with orange; size of the last; found, during summer, in great shoals at Scarborough. The *Cornubiensis*, or Gold finny, is about a palm long; inhabits the Cornish coast. The *Comber*, or Comber, has the back, fins, and tail red; belly yellow; body slender, small; inhabits the coasts of Cornwall. The *Coquus*, or Cook, has the body purple, and dark blue; small in size; found on the Cornish coast.

Wreath. See **Periwinkle.**

Wreck. See **Shipwreck.**

Wren. See **Warbler.**

Wrist. See **Anatomy**, and **Hand.**

Writing. See **Book**, **Ink**, **Paper**, and **Lithography.**

WRY-NECK, or *Yunx*, a genus of birds, consisting of one species only, the *torquilla*, having a smooth, pointed, a little incurved, weak bill; feet climbers; colour grey, varied with brown and blackish; belly reddish white, with blackish spots; tail feathers waved with black spots, streaks, and bars; eggs from eight to ten, and as white as ivory; size of a lark; plumage, a mixture of grey, black, and tawny; food and manners similar to the woodpecker; they arrive in this country in May; from the awkward contorsive motions of the head and neck, it has obtained its English name; they quit this country in September, about which time they grow very fat, and are then esteemed a delicacy; it has been sometimes called an ortolan, from its resemblance to that delicate bird.

Y.

Yak. See **Ox.**

Yacou. See **Penelope.**

YAM, or *Dioscorea*, a genus of plants consisting of fifteen species, all Indian plants; the following is the only one deserving particular notice:

The *Sativa*, or Common yam, has a round wingless stem, and heart-shaped alternate leaves; it is a creeping plant, its stalks trailing on the ground to a considerable distance, and putting out roots from the joints, by which it becomes very considerably multiplied; the roots are used as an esculent, in both the Indies; and are the common food of the slaves in the West Indies.

The plant is propagated exactly as potatoes are propagated in this country; by cutting the root in pieces, and preserving an eye in each piece.

The common number of roots to each plant is from three to four. The common weight of each root is two or three pounds; although they have been occasionally obtained weighing upwards of twenty. There is great variety in the colour, size, and shape of yams; they are generally blue or brown, round or oblong; the inside partakes of the consistency of red beet; but it is white, and in mealiness resembles the potatoe. If kept from moisture the roots may be preserved for years. They are esteemed when dressed, and are considered, nutricious, and easy of digestion. Their taste somewhat like the potatoe, but more luscious. They are also ground into flour, and made into bread and puddings. When they are to be kept for some time they are exposed to the sun, and when sufficiently withered they are put into dry sand, in casks, and placed in a dry room.

In this country the yam can only be cultivated in a hot-house.

YARD, a measure well known in this country, consisting of three feet, or thirty-six inches.

YARROW, MILFOIL, or *Achillea*, a genus of plants comprehending forty-five species, natives chiefly of the southern parts of Europe; they may be arranged into,—undivided leaves,—with pinnatifid leaves,—with pinnate leaves, and flat leaflets,—with pinnate leaves, the outermost leaflets confluent,—with leaves doubly pinnatifid. The *ptarmica*, or Sneeze-wort, and the *millifolium*, or Common Yarrow, are those most commonly found in our own country; the former in our groves, the latter on wastes and commons. They were formerly in the materia medica, but are of no importance.

YAWS, or *Frambœsia*, an eruptive and contagious disease, prevalent in hot climates. But neither its cause nor its cure seems well understood in this country: it is by some persons considered similar to syphilis.

Year. See CALENDAR.

Yeast. See BARM and BREWING.

YELLOW, one of the seven primitive colours. The chief yellows used in *painting* are patent yellow, Dutch pink, yellow ochre, turbith mineral, chrome yellow, &c.; in *dyeing*, weld, quercitron bark, realgar, &c. &c. For most of these see our articles COLOUR-MAKING and DEYING; or each article in the order of the alphabet.

King's Yellow is made thus: mix 20 parts of pulverized arsenic with one part of flowers of sulphur; let them be sublimed in a proper vessel in a sand heat. The colour will be found in the upper part of the glass, whence it must be carefully removed, and levigated till it become a fine powder. This pigment may be also obtained by subliming orpiment in a similar manner; and may be rendered a deeper or lighter colour by increasing or diminishing the proportion of sulphur.

Naples Yellow is prepared by levigating, upon a dry stone, twelve ounces of white-lead, three ounces of antimony, one ounce of alum, and a similar quantity of sal ammoniac. These ingredients must now be exposed in an open crucible to a moderate heat, for some hours; after which the fire should be increased for a short time; the mixture must then continue for three hours in a heat sufficient to keep the crucible red hot, when it will become a beautiful yellow colour; it may be made of a brighter golden shade by increasing the proportions of antimony and sal ammoniac.

YELLOW-FEVER, or *Typhus cum flavedine cutis*, is one of the most fatal diseases to which the inhabitants of warm climates are subject, and is the same with that called the black vomit in some of the warm parts of America.

This complaint most commonly seizes the patient at first with a faintness, then with a sickness at the stomach, accompanied mostly with giddiness of the head; soon after with a slight chilliness and horror, very rarely with a rigor, which is soon followed by a violent heat and high fever, attended with acute pain in the head and back. A flushing in the face, with an inflamed redness, and a burning heat in the eyes; and great anxiety and oppression about the præcordia, are distinguishing characteristics of the disease; especially when attended with sickness, violent retchings, and yellow bilious vomitings. The pulse is generally very quick, soft, and oppressed, and the respiration quick, full, and sometimes difficult; the skin very hot, and sometimes dry, although more frequently moist. As the disease proceeds, the symptoms are all aggravated, and about the third day the external parts of the body become more or less yellow; and, indeed, from the first appearance of the yellowness, the patient may be considered in the last stage of the disease, which, unless effectual means have been taken for its cure, in a few days from its commencement, cuts off the patient in a state of extreme putrescence.

This fever chiefly attacks Europeans, especially those who have lately arrived in warm climates. And although it has been supposed that it is contagious, there seems to be ground for believing that it originates from other causes.

In the cure of this complaint, the best medical advice should, of course, at once be had; but it may be useful to know that early bleeding is considered one of the chief remedies; that the vomitings may be encouraged by large draughts of warm water, *not emetics*; after the evacuation of the contents of the stomach by these means, a grain, or a grain and a half of crude opium may be given, to allay the irritation; after taking which nothing should be taken into the stomach for at least two hours: by these means the vomitings will be much abated. Cooling acidulous drinks may then be taken; if no evacuation from the bowels take place soon after these means have been adopted, a purging clyster must be administered. See CLYSTER. Afterwards warm stimulants, such as infusion of the virginian snake-root, made by pouring eight ounces of boiling water on two drachms of the bruised root; letting it remain for an hour, pouring off six ounces, which must be mixed with four ounces of Madeira wine. Of this two or three spoonfuls must be given every two or three hours.

But a more energetic and effectual practice was adopted by the late Dr. RUSH, of Philadelphia. He orders ten grains of calomel, and fifteen grains of jalap-root in powder, to be given in the first instance, and repeated every six hours, till four or five *large* evacuations from the bowels are procured; and this method must be adopted as soon as the patient is attacked by the disorder, whether by night or by day. The patient should drink plentifully of water-gruel or barley water, to assist the operation of the physic. After the bowels are *thoroughly* cleared, if the pulse be *full*, or *tense*, eight or ten ounces of blood should be taken from the arm, and more, if the tension or fulness should continue. Balm tea, toast and water, weak chamomile tea, or barley-water should be drunk during this stage of the disorder; and the bowels should be kept constantly open, either by another dose of the powder,—by small doses of cream of tartar,—or cooling salts, or by opening clysters; but if the pulse should become weak and low after the bowels are cleansed, infusions of chamomile or snake-root, dilute sulphuric acid, and laudanum; also wine and water, or wine, or even porter may be given; and also the Peruvian bark in the intermission of the fever. Blisters may be also applied to the sides, neck, or head; and the lower limbs may be wrapped up in flannels wetted in hot vinegar, or water. The food should consist of gruel, sago, panada, tapioca, tea, coffee, weak chocolate, wine whey, chicken broth, and the white meats, according to circumstances. The fruits of the season may be also eaten with advantage. Fresh air should be admitted into the room in all cases, and *cool* air when the pulse is full and tense. See CONTAGION and TYPHUS.

Yellow Gum. See YELLOW RESIN-TREE.

Yellow-Hammer. See SNOW BUNTING.

Yellow-Rattle. See RATTLE GRASS.

YELLOW RESIN-TREE, or *Xanthorrhœa*, a genus, in botany, consisting of one species, the *Hastilis*, a native of Australasia, or New South Wales. It affords a *yellow gum*, under which name the gum or resin is known in commerce. This gum is friable, easily separable into scales by the nails, has a shining, compact fracture, is yellow, and has a pleasant balsamic smell like poplar buds. It becomes electric by friction; and its powder stains the paper in which it is kept of a deep indelible yellow; it dissolves almost wholly in spirit of wine, but is neither soluble nor diffusible in water; it is esteemed useful in dysentery; and is employed to unite the lips of wounds, however large or dangerous; it is also used to compose a cement. Its properties and medicinal powers require, however, further confirmation.

YELLOWS, or JAUNDICE, IN HORSES, a disease which is known by a yellowness, approaching sometimes to an orange colour, of the membrane which lines the eye-lids, and the inner parts of the lips and mouth. There is generally a quick pulse, great languor in the animal's appearance, want of appetite, and considerable weakness; the urine is high coloured, and the dung generally in small knobs, and of a slimy appearance. Notwithstanding the animal's weakness he should be bled freely; a laxative clyster is then to be thrown up, and a dose of laxative medicine given. By this treatment he is generally much relieved; and is gradually restored to health by attentive grooming, a light nutricious diet, such as oatmeal, malt-mashes, &c.; in summer green food is proper. In some cases it is necessary to bleed a second time; and if the dung continue hard the laxative ball may be repeated. The following ball may also assist in his recovery: Take of sulphate of iron, carbonate of potash, and cascarilla bark, of each two drachms; of caraway seeds half an ounce; syrup sufficient to form a ball.

YELLOWS, in CATTLE, a disease known by the whole body assuming a yellow cast; a general tremor is also observed every morning over the animal, particularly in the hinder legs, loins, and thighs; the nose is dry; the dew-laps, shoulders, and loins swell; in cows the udder is also tumified, and produces little milk, which has also a yellowish tinge; the fore-teeth also become loose.

In this complaint, as in the yellows of horses, cleansing the stomach and bowels is, doubtless, the chief remedy. For this purpose purging balls and laxative clysters should be given. After these have operated, provided the animal is not feverish, when he must be bled, warm stimulating medicines, such as cayenne pepper, grains of paradise, ginger, and other cordial medicines, may be given in moderate doses of strong beer, or good ale. Bleeding, as in the case of the yellows of horses, may sometimes be of service i the first attack of the complaint; but in general it will be best removed without that operation. In applying these directions some discretion will be necessary. Our readers must not surrender their reasoning faculties when they take up our book.

YEW, or *Taxus*, a genus of plants, consisting of five species, of which the only one cultivated in Europe is the *baccata*, found wild in our own country. It is a very ornamental tree when suffered to assume its natural growth, and not ridiculously cut into grotesque figures and shapes, under the silly notion of improving its appearance. It often grows to a large size,; some are found in this country many feet in diameter, and many hundred years old. The wood is hard, smooth, and beautifully veined; it admits of a fine polish, and is almost incorruptible; hence it is advantageously used by cabinet makers, turners, &c.; for cogs for mill-wheels, axle-trees, flood-gates, &c. The pulpy matter of the small red berries of this tree is often eaten, although when the stones are swallowed they are sometimes said to be injurious. The leaves of the yew are generally reputed to be poisonous, but this is doubtful.

This tree is readily propagated by sowing the seeds as soon as they are ripe, in autumn, in a shady bed of undunged soil. After two years the plants may be transplanted.

Yoke. See Ox.

Yolk. See Egg.

Yorkshire Sanicla. See Butter Wort.

YOUTH, or Adolescence, that happy period of life which commences from childhood, and continues as long as the body increases in dimensions, and terminates at full growth. The period of youth is, however, very indefinite; it usually includes the age from twelve to twenty-one years, or more. During this important stage of existence the mind assumes its grand characteristics, and opinions are received which determine, most frequently, the character and conduct of the future man. It is most usually soon after the commencement of the period of youth that young persons are removed from school, under the impression that their education is completed; but as we have seen, under our articles Education, Mind, and School, it is in truth but *just begun.* We are particularly anxious to impress this upon the minds of our readers: for it too often happens from an inattention to the proper education of the mind after youth is removed from school, that many errors, both in conduct and opinion, are irretrievably fixed upon the human character. Youth ought, most unquestionably, to be taught to canvass freely every subject which is presented to them, not indeed for the purpose of cavil, but for the pursuit and acquisition of truth;—that in the performance of Duties of various kinds consists chiefly their happiness; —and that one of the chief of these is to be always actively engaged in some useful pursuit, either of body or mind, or both: nothing is so injurious to the young mind as an indulgence in sloth.

YTTRIA, an earth discovered in 1794, by Professor Gadolin, at Ytterby, in Sweden. It has since been termed *gadolinite.* It is insipid, white, and without action on vegetable colours. It is insoluble in water, but very retentive of it; it is insoluble in pure alkalis, but readily soluble in carbonated alkalis. It forms salts which have a sweetish austere taste, and which have been but little examined. From indirect experiments it probably contains 25 *per cent.* of oxygen; hence it may be regarded as consisting of yttrium 30, oxygen 7,5=Yttria. See Earths and Metals.

YUCCA, a genus of plants, comprehending six species, shrubs of the West Indies and America, and all of them cultivated; they are the *gloriosa*, or Common Adam's needle; the *filamentosa*, or Thready Virginian; the *aloefolia*, or Aloe-leaved; and the *draconis*, or Dragon-tree-leaved yucca.

Z.

ZAFFRE, an impure oxide of cobalt, of a blue colour, and much employed for painting pottery and porcelain of a blue colour. The blue afforded by zaffre is the most solid and fixed of all the colours that can be employed in vitrification, it suffering no change from the most violent fire. See Cobalt.

Zebra. See Horse.

Zebu. See Ox.

ZEDOARY, or *Zedoaria*, the *Amomum zedoaria* of Linnæus, is the root of a perennial plant, a native of the

East Indies, growing in Ceylon and Malabar; the leaves are palmated, broad, lanceolate: the root is tuberous, oblong, and about the thickness of the finger; it is yellowish when broken, and appears, in colour and properties, nearly allied to turmeric, of which it is, most probably, a species. As a medicine, it has been esteemed tonic and carminative; but is of little importance. See TURMERIC.

ZEOLITE, a genus of argillaceous earths, consisting of several varieties. The principal are the *radiated*, or *mesotype*; the *nacreous*, or *stilbite*; the *efflorescent*, or *laumonite*, and the *cubic*, or *analcime*. They fuse and intumesce before the blow-pipe, and mostly form gelatinous solutions in acids.

Mesotype, is solid, fibrous, and shining like mother of pearl; colour white, reddish, brownish, yellow, or cinereous; specific gravity 2,0833; found in Scotland, various other parts of Europe, and the lavas of Iceland. *Stilbite*, is solid, shining, internally white, with often a shade of red. Found in Ostrogoth and Iceland. *Radiated*, or *acicular zeolite*, contains by analysis, silica 50,24; alumina 29,30; lime 9,46; water 10.

ZEUS, or DOREE, a genus of fishes comprehending eight species, distinguished by a compressed head, and a compressed, thin, shining body. The following are the chief.

The *Faber*, or Common John Doree, is in all its parts of an equal thickness; the body in shape resembles a flounder, but it swims erect and not on the side; the mouth is immoderately large, being, together with the head, bigger than the body; is distinguished from every other fish, by a round black spot on each side, of about the size of a sixpence; it is a foot and a half long; the hideous aspect of this fish long banished it from our tables, till Quin introduced it among the most delicate viands of the times. It is found on our own shores, the Mediterranean, and other coasts of Europe.

The *Luna*, Opah, or King fish, has a somewhat lunate tail; body beautifully red, green, or purple, with oval white spots; fins scarlet; length three or four feet, depth two or more, and sometimes weighing one hundred and forty pounds; flesh, the taste and appearance of beef; a rare fish, found occasionally on the British shores, the most splendid of all the European fishes.

The *Insidiator*, inhabits the fresh waters of India, skin thin, silvery, without scales.

The *Gallus* has the tenth ray of the dorsal fin, and the second of the anal, longer than the body; length six inches; body without scales, greenish silvery; flesh very good; inhabits the American and Indian seas.

ZINC, or *Zincum*, sometimes called SPELTER, is a bluish-white metal, of a fibrous, or scaly texture; its specific gravity is 7; it is malleable at 300; but very brittle when its temperature approaches that of fusion, which is about 680. When rubbed between the fingers it emits a very perceptible odour, and has a peculiar taste. It is found in the state of *oxide* and of *sulphuret*.

Calaminaris, Oxide of Zinc, or Calamine, is found in various parts of Great Britain, New Spain, Poland, Silesia, Saxony, Austria, &c.; it is in colour greyish, greenish, yellowish, reddish, or brownish; fracture earthy, sometimes splintery, rarely conchoidal.

Sulphuret of Zinc, *Blende*, or *Black Jack*, is a brittle soft mineral, of different shades of brown or black. Its primitive form is the rhomboidal dodecaedron. It usually contains traces of lead. It is an abundant mineral, and important, as a source of the pure metal, which is obtained by roasting the ore, and afterwards exposing it to heat, in proper distillatory vessels, mixed with charcoal. It is found in various parts of Great Britain, Siberia, Norway, Sweden, Germany, Hungary, &c., it varies in shapes and mixtures.

Zinc may be obtained pure, by dissolving the zinc of commerce in dilute sulphuric acid, and immersing a plate of zinc for some hours in the solution; which is then filtered, decomposed by subcarbonate of potash, and the precipitate ignited with charcoal in an iron or earthen retort.

The uses of zinc in the arts are various and great. With copper it forms brass; and in other proportions with copper, it forms pinchbeck, prince's metal, &c.; and when mixed with lead it forms the compound metal called *tutenag*. See BRASS, COPPER, and GALVANISM.

If melted zinc be exposed to intense heat, it becomes oxidated, the oxide is volatilized by the current of the flame, and when condensed, it appears in the form of little white flakes, which were formerly called *flowers of zinc*. Tutty is an impure oxide of zinc, see TUTTY; so also is the common calamine of the shops.

This metal is easily soluble in the acids; the solutions are all violent emetics, and, of course, in large doses, poisonous.

The most common of the salts of zinc is *sulphate of zinc*, white vitriol, or white copperas, as it is sometimes erroneously called. It is prepared in Germany, by roasting blende, and then exposing it to the air. It is also, we believe, at the present time occasionally prepared in this country. The sulphate of zinc, or white vitriol, found in commerce, generally contains a small portion of iron and sometimes lead; it is used in this state largely as a drying ingredient by painters, but for medicinal use it should be made thus:

Sulphate of Zinc. Take of zinc broken into small pieces, three ounces; sulphuric acid five ounces; water four pints; mix them in a glass vessel, and the effervescence being over, filter the solution through paper; then boil it until a pellicle begins to form on the surface, and set it aside to crystallize.

Sulphate of zinc is tonic and astringent; and in large doses emetic. As a tonic, it is less heating than sulphate of iron, and hence is preferable in pulmonary consumption, and some other diseases; it is also useful in dyspepsia, fluor albus, hooping-cough, St. Vitus's dance, and epilepsy; it is combined in these latter diseases with myrrh, bitter extracts, opium, fox-glove, &c. according to circumstances. As an emetic, it operates almost instantaneously, and is often usefully employed where quick vomiting is required. As an external application, this salt in the proportion of one grain and a half dissolved in one fluidounce of rose-water is a useful application to ophthalmia, after the inflammatory action has subsided; it is also a good injection in gonorrhœa, and a lotion in some other superficial apparent inflammations. In double the strength, this solution is the best application to scrofulous tumours, after they have suppurated, and the abscess has been discharged.

The dose to produce vomiting is from ten grains to half a drachm, and as a tonic, from one grain to two may be given twice a day.

The *oxide of zinc* is tonic and antispasmodic, and has been given in St. Vitus's dance, epilepsy, and some other spasmodic diseases, with advantage; the dose may be from one grain to six, twice a day. It is, however, more commonly used for the

Ointment of zinc. Take of oxide of zinc one ounce; lard six ounces; mix them.

This ointment is moderately astringent, and stimulant. It may be usefully applied to obstinate inflammation of the eyes; it is also a useful application to sore nipples; and to ringworms, particularly when it attacks the scalp.

For a cerate of impure oxide of zinc, see CALAMINE CERATE.

ZINNIA, a genus of plants, consisting of five species, natives of Mexico, and Peru; the *pauciflora*, or Few-flowered yellow zinnia, an annual, with stalks three feet high, and yellow terminal flowers; and the *multiflora*, or Many-flowered red zinnia, also an annual, with an erect stalk and reddish flowers are the chief. They are both best propagated by seeds after the manner of hot-house annuals.

ZIRCON, or *Jargon*, a mineral of

a grey, yellowish, or reddish-brown colour, crystallized in octoëdrons, and four-sided prisms, and generally semitransparent; it is found in the island of Ceylon. From this substance is obtained one of the new metals called *zirconium*; the properties of which have been but little investigated.

Zirconium. See the preceding article.

ZOOLITHUS, in mineralogy, a genus of petrifactions, consisting of the body of some mammalian animal, below the rank of man, or some of its parts changed into a fossile substance. The *turquoise* of a bluish-green colour, and found in the copper mines of Cumberland, in Persia, Siberia, &c. &c., is one of the chief species; it appears to be the teeth of some animal.

ZOOLOGY, the doctrine or description of the animal kingdom. This together with BOTANY, and MINERALOGY, include what is commonly understood by NATURAL HISTORY.

Various artificial arrangements of the subjects comprehended under the term zoology, have been published, the chief of which are those of LINNÆUS, CUVIER, and BLUMENBACH. The method of Cuvier is, in some respects, an improvement on that of Linnæus; Blumenbach differs from Cuvier in his subdivisions, but the grand outlines of the arrangements of the two last are the same. The classification of Linnæus is at present the most popular; although that of Cuvier is more definite and ingenious, and may possibly hereafter take the lead. As it is not consistent with our limits to give a view of both systems, we shall exhibit a compendium of that of Linnæus, according to which the articles in our work are arranged, a few only excepted.

Linnæus divides the whole animal kingdom into *six classes*. The characters of these classes are taken from the internal structure of animals in the following manner:

Class I. *Mammalia*, or mammals, includes all animals which suckle their young. The characters of this class are these: the heart has two ventricles, and two auricles; the blood is red and warm; the animals belonging to it are viviparous.

Class II. *Aves* or birds. The characters are the same with those of Class I. excepting that the animals belonging to it are oviparous.

Class III. *Amphibia*, or amphibious animals. The heart has but one ventricle and one auricle; the blood is red and cold; the animals belonging to this class have the command of their lungs, so that the inspiration and expiration are in some measure voluntary.

Class IV. *Pisces*, or fishes. The heart has the same structure, and the blood the same qualities with those of the amphibia; but the animals belonging to this class are easily distinguished from the amphibia, by having no such voluntary command of their lungs, and by having external *branchiæ*, or gills.

Class V. *Insecta*, or Insects. The heart has one ventricle, but no auricle; the blood is cold and white; the animals furnished with antennas, or feelers.

Class VI. *Vermes*, or Worms. The characters are the same with those of Class V. only the animals have no antennas, and are furnished with *tentacula*, or tentacles.

The first class, *Mammalia*, is subdivided into *seven* orders, the characters of which are taken from the number, structure and situation of the teeth.

Order I. *Primates*. These have four incisors, or fore-teeth in each jaw; and one dog tooth on each side of the incisors in each jaw; the dog teeth are consequently four—two in each jaw. This order includes *four* genera: *Homo*, or MAN; *Simia*, or Monkey, &c.; *Lemur*, or Macauco; *Vespertilio*, or Bat.

Order II. *Bruta*. These have no fore-teeth in either jaw. *Seven* genera: *Rhinoceros*; *Elephas*, or Elephant; *Trichechus*, or Morse, &c.; *Bradypus*, or Sloth; *Myrmecophaga*, or Ant-eater; *Manis*, or Pangolin; *Dasypus*, or Armadillo.

Order III. *Feræ*. These have, for the most part, six conical fore-teeth in each jaw. *Ten* genera: *Phoca*, or Seal; *Canis*, or Dog; *Felis*, or Cat, Lion, Tiger, &c.; *Viverra*, or Ichneumon, Civet, &c.; *Mustela*, or Otter, &c.; *Ursus*, or Bear, &c.; *Didelphis*, or Opossum; *Talpa*, or Mole; *Sorex*, or Shrew; *Erinaceus*, or Hedge-hog.

Order IV. *Glires*. These have two fore-teeth in each jaw, and no dog-teeth. *Ten* genera: *Hystrix*, or Porcupine; *Lepus*, or Hare and Rabbit; *Castor*, or Beaver; *Mus*, or Rat, Mouse, &c.; *Sciurus*, or Squirrel; *Myoxus*, or Dormouse; *Cavia*, or Cavy, and Guinea-pig; *Arctomys*, or Marmot; *Dipus*, or Jerboa; *Hyrax*, or Cape and Syrian rabbit.

Order V. *Pecora*. These have no fore-teeth in the upper jaw, but six or eight in the under jaw. *Eight* genera: *Camelus*, or Camel, &c. *Moschus*, or Musk; *Giraffa*, or Camelopardalis; *Cervus*, or Deer, Stag, &c.; *Antelope*; *Capra*, or Goat, &c.; *Ovis*, or Sheep; *Bos*, or Ox.

Order VI. *Belluæ*. These have obtuse fore-teeth in each jaw. *Four* genera: *Equus*, or Horse, Ass, &c.; *Hippopotamus*, or River-Horse; *Sus*, or Swine; *Tapir*.

Order VII. *Cete*, or Whale kind. These have no uniform character in their teeth, being very different in the different genera; but are sufficiently distinguished from the other orders of mammalia, by living in the ocean, having pectoral fins, and a fistula, or spiraculum upon the head. *Four* genera: *Monodon*, or Narwhal; *Balæna*, or Whale; *Physeter*, or Spermaceti whale; *Delphinus*, or Dolphin, Porpoise, and Grampus.

The *generic* characters of the *Mammalia* are like those of the orders above, entirely taken from the teeth, excepting in the vespertilio, or bat, which besides the character of the order derived from the teeth, has this further mark, that there is a membrane attached to the feet and sides, by means of which, the creature is enabled to fly; the hystrix, or porcupine, has the body covered with sharp spines; and the whole order pecora are distinguished in the genera, into those which have horns, those which have no horns, and by peculiarities in the horns themselves.

The *specific* characters are very various, being taken from any part of the body which possesses a peculiar uniform mark of distinction. Examples of these characters will be found under the proper name of each genus, or some distinguished species of the genus, in the various parts of our work, and consequently, need not be noticed here.

The Class *Aves*, or birds, is subdivided into *six* orders, the characters of which are taken chiefly from the structure of the bill.

Order I. The *Accipitres*, have a hooked bill, the superior mandible near the base being extended on each side beyond the inferior; in some it is armed with teeth. This order includes *four* genera: *Vultur*, or Vulture; *Falco*, the Falcon, Eagle, Hawk, &c.; *Strix*, or Owl; *Lanius*, or Shrike.

Order II. The *Picæ* have a convex, compressed bill, resembling a knife. *Twenty-three* genera: *Trochilus*, or Humming-bird; *Certhia*, or Creeper; *Upupa*, or Hoopoe; *Glaucopis* or Wattle-bird; *Buphaga*, or African Beef-eater; *Sitha*, or Nuthatch; *Oriolus*, or Oriole; *Coracias*, or Roller; *Gracula*, or Grakle; *Corvus*, or Crow, Raven, Rook, &c.; *Paradisea*, or Bird of Paradise; *Ramphastos*, or Toucan; *Trogon*, or Curucui; *Psittacus*, or Parrot; *Crotophaga*, or Ani; *Picus*, or Woodpecker; *Yunx*, or Wry-neck; *Cuculus*, or Cuckow; *Bucco*, or Barbet; *Buceros*, or Horn-bill; *Alcedo*, or King-fisher; *Merops*, or Bee-eater; *Todus*, or Tody.

Order III. The *Anseres* have a smooth bill, broadest at the point, covered with a smooth skin, and furnished with teeth; the tongue is fleshy, and the toes are palmated, or webbed. *Thirteen* genera. *Anas*, or Duck, Goose, Swan, &c.; *Mergus*, or Merganser; *Phaëton*, or Tropic bird; *Plotus*, or Darter; *Rynchops*, or Skimmer; *Diomedea*, or Albatross; *Aptenodytes*, or Penguin; *Alca*, or Auk; *Procellaria*, or Petrel; *Pelecanus*, or Pelican, &c.; *Larus*, or Gull; *Sterna*, or Tern; *Colymbus*, or Diver, Grebes, Guillemots, &c.

Order IV. The *Grallæ* have a somewhat cylindrical bill; the tail is short, and the thighs naked. *Twenty* genera: *Phœnicopterus*, or Flamingo; *Platalea*, or Spoonbill; *Palamedia*, or Screamer; *Mycteria*, or Jabiru; *Tantalus*, or Ibis; *Ardea*, or Crane, Heron, Stork; *Corrira*, or Courier, *Recurvirostra*, or Avocet; *Scolopax*, or Curlew, Woodcock, Snipe, &c.; *Tringa*, or Lapwing, Sand-piper, &c.; *Fulica*, or Coot, Gallinule, &c.; *Parra*, or Jacana; *Rallus*, or Rail; *Vaginalis*, or Sheathbill; *Psophia*, or Trumpeter; *Cancroma*, or Boatbill; *Scopus*, or Umbre; *Glareola*, or Pratincole; *Hæmatopus*, or Oyster catcher; *Charadrius*, or Plover, Dotterel, &c.

Order V. The *Gallinæ* have a convex bill; the superior mandible is vaulted over the inferior; the nostrils are half covered with a convex cartilaginous membrane; the feet are divided, but connected at the inmost joint. *Ten* genera: *Struthio*, or Ostrich and Cassowary; *Didus*, or Dodo; *Pavo*, or Peacock; *Meleagris*, or Turkey; *Penelope*, or Guan, Yacou, &c; *Crax*, or Curassow; *Phasianus*, or Pheasant, Cock, &c.; *Numidia*, or Guinea hen; *Tetrao*, or Partridge, Grouse, Quail, &c.; *Otis*, or Bustard.

Order VI. The *Passeres* have a conical sharp-pointed bill; the nostrils are oval, wide, and naked. *Seventeen* genera: *Loxia*, or Grosbeak, &c; *Colius*, or Coly; *Fringilla*, or Finch, Canary bird, &c.; *Phytotoma*; *Emberiza*, or Bunting, Ortolan, &c.; *Caprimulgus*, or Goat-sucker; *Hirundo*, or Swallow, Martin, &c.: *Pipra*, or Manakin; *Turdus*, or Thrush, Black-bird, &c.; *Ampelis*, or Chatterer; *Tanagra*, or Tanager; *Muscicapa*, or Fly-catcher, *Parus*, or Titmouse; *Motacilla*, or Warbler, Nightingale, Red-breast, &c.; *Alauda*, or Lark; *Sturnus*, or Starling; *Columba*, or Pigeon, &c.

The generic characters of this class are taken from peculiarities in the bill, the nostrils, the tongue, the feet, the feathers, the face, the figure of the body, &c.

The *specific* characters are very various; they consist in the colour of the particular feathers, or parts of feathers; crests of feathers on the head, disposed in different manners; the colour of the cere, or wax; the colour of the feet; the shape and length of the tail; the number, situation, &c. of the toes; the colour and figure of the bill, &c.

The third class, *Amphibia*, is divided into *two* orders.

Order I. The *reptilia*, have four feet, and breathe by the mouth. This order contains *four* genera: *Testudo*, or Tortoise, and Turtle; *Draco*, or Dragon; *Lacerta*, or Lizard, Crocodile, Alligator, &c.; *Rana*, or Frog and Toad.

Order II. The *Serpentes* have no legs; they breathe by the mouth; *six* genera; *Crotalus*, or Rattlesnake; *Boa*; *Coluber*, Vipers, &c; *Anguis*, or Snake, &c.; *Amphisbœna*; *Cæcilia*. In the present work, all the genera of this order are described under the head SERPENT, except the *warted snake*, which see.

The *generic* characters of this class are taken from the general figure of the body; from their having tails or no tails; being covered with a shell; having teeth or no teeth, in the mouth; being furnished with lungs; having covered or naked bodies; from the number, situation, and figure of the scuta, and scales; from the number and situation of the spiracula; from the situation of the mouth, &c.

The *Specific* characters are very various: we have not room to enumerate them.

The fourth Class, *Pisces*, or Fishes, is subdivided into *six* orders, the characters of which are taken from the situation of the belly fins.

Order I. The *Apodalia* have no belly fins. This order contains eight genera: *Muræna*, or Eel; *Gymnotus*, or Gymnote; *Trichiurus*, or Trichiure; *Anarhicas*, or Wolf-fish; *Ammodytes*, or Launce; *Ophidium*; *Stomateus*: *Xiphias*, or Sword-fish; *Sternoptyx*; *Leptocephalus*, or Morris.

Order II. The *Jugularia* have the belly fins placed before the pectoral fins. *Five* genera: *Callionymus*, or Dragonet; *Uranoscopus*, or Star-gazer; *Trachinus*, or Weever; *Gadus*, or Cod, Whiting, &c.; *Blennius*, or Blenny; *Kurtus*.

Order III. The *Thoracica* have the belly fins placed under the pectoral fins. *Nineteen* genera: *Cepola*; *Echineis*, or Sucking fish; *Coryphæna*, or Parrot fish, &c.; *Gobius*, or Goby; *Cottus*, or Bull-head; *Scorpæna*; *Zeus*, or Doree; *Pleuronectes*, or Flat-fish; *Chætodon*; *Sparus*, or Gilt-head, Pudding fish, &c.; *Scarus*; *Labrus*, or Wrasse, Old Wife, &c.; *Sciæna*, or Umbra; *Perca*, or Perch, &c.; *Gasterosteus*, or Stickle-back, Pilot fish, &c.; *Scomber*, or Mackarel, Thunny, &c.; *Centrogaster*; *Mullus*, or Surmullet; *Trigla*, or Gurnard.

Order IV. The *Abdominalia* have the belly fins placed behind the pectoral fins. *Sixteen* genera: *Cobitis*, or Loche; *Amia*; *Silurus*, or Silure; *Teuthis*; *Loricaria*; *Salmo*, Salmon, Trout, &c; *Fistularia*, or Tobacco-pipe fish; *Esox*, or Pike; *Elops*, or Scar fish; *Argentina*, or Argentine; *Atherina*, or Silver fish, &c.; *Mugil*, or Mullet; *Exocœtus*, or Flying fish; *Polynemus*, or Polyneme; *Clupea*, or Herring, Pilchard, &c.; *Cyprinus*, or Carp, Tench, &c.

Order V The *Brachiostega* have the gills destitute of bony rays. *Ten* genera: *Mormyrus*; *Ostracion*, or Trunk-fish; *Tetrodon*, or Sun-fish; *Diodon*; *Syngnathus* or Pipe-fish; *Pegasus*; *Centriscus*; *Balistes*, or File-fish; *Cyclopterus*, or Sucker; *Lophius*, or Frog-fish

Order VI. The *Chondropterigia*, have cartilaginous gills. *Five* genera, *Acipenser*, or Sturgeon; *Chimæra*, or Sea-monster; *Squalus*, or Shark; *Raia*, or Ray, Skate, Torpedo, &c.: *Petromyzon*, or Lamprey.

The *generic* characters of this class are taken from the peculiarities in the head, the mouth, the teeth, the nostrils, the rays in the membrane of the gills, the general figure of the body, the figure of the tail, the situation of the spiracula, &c.

The *specific* characters are taken from peculiarities in all the parts above enumerated, and many others.

The *fifth* Class, *Insecta*, or insects, is subdivided into *seven* orders, the characters of which are taken from the wings.

Order I.—The *Coleoptera* have four wings, the two superior ones being crustaceous, and furnished with a straight suture. This order comprehends *fifty-four* genera: *Scarabæus*, or Beetle, Cock-chaffer, &c.; *Lucanus*, or Stag-beetle; *Dermestes*, or Leather eater; *Melyris*; *Byrrhus*; *Silpha*, or Carrion-beetle; *Tritoma*; *Hydrophilus*; *Hister*; *Paussus*; *Bostrichus*; *Anthrennus*; *Nitidula*; *Coccinella*, or Lady-bird; *Curculio*, or Weevil; *Brentus*; *Attelabus*; *Erodius*; *Staphylinus*; *Scaurus*; *Zygia*; *Meloe*, or Blossom-eater; *Tenebrio*, or Darkling; *Cassida*, or Tortoise-beetle; *Opatrum*; *Mordella*, or Nibbler; *Chrysomela*; *Horia*; *Apalus*; *Manticora*; *Pimelia*; *Gyrinus*, or Water-flea; *Cucujus*; *Cryptocephalus*; *Bruchus*; *Ptinus*; *Hispa*; *Buprestis*; *Necydalis*, or Carrion eater; *Lampyris*, or Fire-fly, Glow-worm, &c.; *Cantharis*; *Notoxus*; *Elater*; *Calopus*; *Alurnus*; *Carabus*; *Lytta*, or Spanish-fly, &c.; *Serropalpus*; *Cerambyx*; *Leptura*, or Wood-beetle; *Rhinomacer*; *Zonitis*; *Cicindela*; *Dytiscus*; *Forficula*, or Ear-wig.

Order II.—The *Hemiptera* have four wings, the two superior ones being semicrustaceous, having the interior edges lying above one another. *Fourteen* genera: *Blatta*, or Cock-roach; *Pneumora*; *Mantis*, or Soothsayer; *Gryllus*, or Cricket, Locust, &c.; *Fulgora*, or Lanthorn-fly; *Cicada*, or Grass-hopper; *Notonecta*, or Boat-fly; *Nepa*, or Water scorpion; *Cimex*, or Bug; *Macrocephalus*; *Aphis*, or Plant-louse; *Chermes*; *Coccus*, or Cochineal insect, &c.; *Thrips*.

Order III.— The *Lepidoptera* have four wings, all of them imbricated with scales. *Three* genera: *Papilio*, or Butterfly; *Sphinx*, or Hawk-Moth, &c.; *Phalæna*, or Moth.

Order IV.—The *Neuroptera* have four wings, interwoven with veins like a piece of net-work, and no sting in the anus. *Seven* genera: *Libellula,* or Dragon-fly; *Ephemera,* or May-fly, Day-fly; *Hemerobius*; *Myrmelion,* or Lion-ant; *Phryganea*; *Panorpa*; *Rophidia.*

Order V.—The *Hymenoptera* have the same characters as the last, only the anus is armed with a sting; this mark is, however, peculiar to the females, and those commonly called neuters, which are, most probably, imperfectly developed females; the males having no sting. *Fifteen* genera: *Cynips,* or Gall-fly; *Tenthredo,* or Saw-fly; *Sirex,* or Tailed wasp; *Ichneumon*; *Sphex,* or Savage; *Scolia*; *Thynnus*; *Leucopsis*; *Tiphia*; *Chalcis*; *Chrysis,* or Golden-fly; *Vespa,* or Wasp, &c.; *Apis,* or Bee, &c.; *Formica,* or Ant; *Mutilla.*

Order VI.—The *Diptera* have two wings, and two elevated halters or balances behind each wing. *Twelve* genera: *Diopsis*; *Tipula,* or Crane-fly; *Musca,* or Fly, House-fly, &c.; *Tabanus,* or Flog, Ox-fly, &c.; *Empis*; *Conops*; *Oestrus,* or Gad-fly; *Asilus*; *Stomoxys*; *Culex,* or Gnat; *Bombylius*; or Humble-bee, &c.; *Hippobosca,* or Horse-fly, &c.

Order VII.—The *Aptera* have no wings. *Fifteen* genera: *Lepisma*; *Podura,* or Spring-tail; *Termes,* or White ant, &c.; *Pediculus,* or Louse; *Pulex,* or Flea; *Acarus,* or Tick; *Hydrachna*; *Aranea,* or Spider; *Phalangium,* or Long-legged spider, &c.; *Scorpio,* or Scorpion; *Cancer,* or Crab, Lobster, Shrimp, &c.; *Monoculus,* King-crab, &c.; *Oniscus,* or Wood-louse, &c.; *Scolopendra,* or Centipede, &c.; *Julus.*

The sixth Class, *Vermes,* or Worms, is divided into *five* orders.

Order I.—The *Intestina* are the most simple animals, being perfectly naked, and without limbs of any kind. This order contains *twenty-one* genera: *Ascaris,* or Thread worms; *Trichocephalus,* or Long hair-worm, &c.; *Uncinaria*; *Filaria,* or Guinea-worm, &c.; *Scolex*; *Ligula*; *Linguatula*; *Strongylus*; *Echynorhychus*; *Hæruco*; *Cucullanus*; *Caryophyllæus*; *Fasciola,* Gourd-worm, or Fluke; *Tænia,* or Tape-worm; *Furia*; *Gordius,* or Hair-worm; *Hirudo,* or Leech; *Lumbricus,* or Earth-worm; *Sipunculus,* or Tube-worm; *Planaria.*

Order II.—The *Mollusca* are likewise simple naked animals, without any shell; but they are brachiated, or furnished with a kind of limbs. *Thirty-one* genera: *Actinia,* Sea-anemone, or Sea-daisy, &c.; *Clava*; *Mammaria*; *Pedicellaria*; *Ascidia*; *Salpa*; *Dagysia*; *Pterotrachea*; *Limax,* or Slug-snail; *Aplysia*; *Doris*; *Tethys*; *Holothuria*; *Terebella,* or Ship-worm, &c.; *Triton*; *Sepia,* or Cuttle-fish; *Clio*; *Lobaria*; *Lernæa,* Salmon-louse, &c.; *Scyllæa*; *Glaucus*; *Aphrodita*; *Amphitrite*; *Spio*; *Nereis*; *Nais*; *Physsophora*; *Medusa*; *Lucernaria*; *Asterias,* or Star-fish; *Echinus,* or Sea hedge-hog.

Order III.—The *Testacea* have the same characters as the last, but are covered with a shell. *Thirty-six* genera: *Chiton*; *Lepas,* or Acorn-shell; *Phloas*; *Mya,* or Gaper; *Solen,* or Razor sheath; *Tellira*; *Cardium,* or Cockle; *Mactra*; *Donax*; *Venus*; *Spondylus*; *Chama*; *Arca,* or Noah's Ark; *Ostrea,* or Oyster; *Anomia*; *Mytilus,* or Muscle; *Pinna*; or, Nacre; *Argonauta,* or Nautilus; *Nautilus,* or Pearly Nautilus; *Conus,* or Cone; *Cypræa,* or Cowrie; *Bulla*; *Voluta,* or Volute and Mitre; *Buccinum,* or Whelk; *Strombus,* Cormorant's foot, &c.; *Murex,* or Purple fish; *Trochus*; *Turbo,* or Wreath; *Helix,* House-snail, &c.; *Nerita,* or Nerite; *Haliotis,* or Sea-ear; *Patella,* or Limpet; *Dentalium,* or Tooth-shell; *Serpula,* or Watering pot, &c.; *Teredo,* or Ship worm, &c.; *Sabella.*

Order IV.—The *Zoophyta* are compound animals, furnished with a kind of flowers, and having a vegetating root and stem. *Fifteen* genera: *Tubipora,* or Tubipore; *Madrepora,* or Madrepore; *Millepora,* or Millepore; *Cellepora,* or Cellepore; *Isis,* Coral, &c.; *Antipathes*; *Gorgonia,* Red coral, &c.; *Alcyonium,* Dead man's hand, Sea-fig, &c.; *Spongia,* or Sponge; *Flustra,* or Horn-wrack; *Tubularia*; *Corallina,* or Coralline; *Sertularia*; *Pennatula,* or Sea pen; *Hydra,* or Polype. Of this class, the four first genera are, for the most part, corals.

Order V.—The *Infusoria* consist of very small simple animals. *Fifteen* genera: ***Brachionus**; **Vorticella**; **Trichoda**; **Cercaria**; **Leucoptera**; **Gonium**; **Colpoda**; **Paramecium**; **Cyclidium**; **Bursaria**; **Vibrio**; **Enchelis**; **Bacillaria**; **Volvox**; **Monas**.*

We think it proper to observe, that although a notice of *every* genera, above enumerated, will not be found in our work, the whole range of natural history not being within our design, yet, we believe, no subject of any importance has been omitted; we have also taken considerable pains to make this compendium intelligible and suitable to the Family Cyclopædia, by the addition of the trivial names, so that reference to the subjects may be, at once, easily made.

ZYGOPHYLLUM, or *Bean caper*, a genus, consisting of ten species, natives of the East and West Indies, and the Cape. The following are cultivated: the *Fabago*, or Common, the *Sessifolium*, or African, the *Morgsana*, or Purslane-leaved Ethiopian, the *Spinosum*, or Thorny, and the *Album*, or White Egyptian bean-caper. The first is herbaceous, and should be propagated by seeds; the rest are shrubs or under shrubs, and may be increased by seeds or cuttings.

THE END.

APPENDIX.

ABSORBENTS, in anatomy, small, delicate, transparent vessels, which take up any fluid from the surface of the body, or in any cavity in it, and carry it to be mixed with the blood. They are denominated according to the liquids which they convey, *lacteals* and *lymphatics*. See Lacteals, Lymphatics, and Thoracic Duct.

ABSCESS, in Horses, is generally produced by a bruise or some external injury; it sometimes, however, arises from other causes. To hasten the suppuration, poultices are the best applications, and of these the poultice mentioned under our article Abscess, made with oatmeal or linseed meal, and the grounds of porter, or other malt liquor, is the best. It ought to be renewed twice a day. When poultices cannot be conveniently used, warm fomentations may be substituted for them. An abscess should not be opened too early; when it is ripe it may be opened with a lancet, or other convenient instrument; and, in general, it is best to lay the cavity completely open, in order that all the pus may escape; afterwards merely by washing it twice or thrice a day with warm water, it will soon get well without further trouble. The common practice of making a small opening only, and filling it with tow and digestive ointment is bad and should not be adopted. When sinuses or pipes are discovered, they must be laid completely open, and washed with a solution of sulphate of copper or other detergent fluid. See Fistula, Strangles, &c.

ACANTHUS, Branckursine, or *Bear's breech*, a genus consisting of fourteen species, natives of Asia, the Cape, and the South of Europe; but of no importance.

For another acanthus, or rather *Pyracanthus*, see Thorn.

Acetate. See Vinegar.

Acidulated water. See Potash.

Acton water and its references, ought to have been omitted, as of no importance.

Adjowaen seeds. See Marjoram.

Adversity. See Prosperity.

Agave. See American Aloe.

Alaternus. See Buckthorn.

ALATERNUS, the Bastard, or *Phylica*, a genus of Cape or African plants. The *Ericoides*, or Heath-leaved, the *Plumosa*, or Woolly-leaved, and the *Buxifolia*, or Box-leaved phylica, are cultivated: they are tender and shrubby, and may be propagated by cuttings and slips, and require the shelter of a greenhouse in winter. They produce no seeds in this climate.

ALBATROSS, or *Diomedea*, a genus of birds consisting of four species, having a straight bill, upper mandible hooked at the point, lower truncate, feet four-toed, all placed forward. They are as follow:

The *Exulans*, Wandering Albatross, or Man-of-war-bird, is white, back and wings with white lines, bill pale yellow, legs flesh colour, quill feathers black, tail rounded, lead colour. Two other varieties. Inhabits most seas, chiefly within the tropics; from three and a half to four feet long. Eggs numerous, size of a goose's, the white not hardened by boiling; flesh tough. Its cry harsh and braying; sometimes swallows fish so large that the whole cannot enter into the stomach; at such times it is easily knocked down and killed; but at other times makes a stout resistance.

The *Spadicea*, or Chocolate Albatross, has the body deep chesnut brown; belly pale, face and wings beneath whitish; another variety, grey brown; the first three feet long, inhabits the Pacific Ocean; the second two and a half feet long.

The *Chlororhyncos*, or Yellow-nosed Albatross, has the body above black-blue, beneath white; three feet long; inhabits the Pacific ocean.

The *Fuliginosa*, or Sooty Albatross, is brown, head, bill, tail, quill feathers, and claws, sooty brown; three feet long; inhabits the seas within the Arctic circle.

ALEXANDERS, or *Smyrnium*, a genus of plants, consisting of seven species, scattered over the Levant, the Cape, and America; one, the *Olusatrum*, common to our own country. It is occasionally cultivated, and has a fleshy, branched, succulent root, in flavour not unlike celery, but more strong and bitter; flowers greenish yellow; fruit large black, remarkably gibbous.

Amaranth. See BLITE, and LOVE LIES BLEEDING.

Amaryllis See LILY DAFFODIL.

AMERICAN ALOE, or *Agave*, a genus of magnificent plants, consisting of seven species, all of which are natives of North or South America; one or two are also found in the hedges of Spain and Portugal. The *Americanum* is said to flower only once in a century. It is found in various parts of Italy, although said not to be indigenous to that country; the flower stem is sometimes above twenty-eight feet high, and its circumference, where it emerges from the leaves, two feet ten inches. It rarely flowers in this country; and it is supposed that the plant, in no climate, flowers more than once.

For *Amourosis*, read *Amaurosis*.

Aneurism. Page 31, Col. 1, line 18 from the bottom, for *cause* read *causes*.

Angler. See FROG-FISH.

ANI, or *Crotophagi*, a genus of birds comprising four species, natives of South America. The *Ani*, or Leper ani, is blackish violet, feet formed for climbing; thirteen and a half inches long; gregarious; many females laying in the same nest, each taking care of its own brood; feeds on fruits, worms, &c.; picks out the Acarus, or Tick, from the back of cattle infested with it, for which purpose it is said that they will lie down spontaneously. The *major*, or Greater ani, is also blackish violet; feathers edged with green; eighteen inches long; docile and easily tamed; found in Cayenne. The *Varia*, or Varied ani, is varied with black and red; eleven inches long. The *Ambulatoria* is found in Surinam, and resembles, except in its feet, the last.

Anime, a gum, see LOCUST.

Ant, the white. See TERMES.

ANT-EATER, or *Myrmecophaga*, a genus of mammalian quadrupeds consisting of seven species, distinguished by being toothless; tongue round, extensile; mouth narrowed into a snout; body covered with hair. The following are the chief:

The *Jubata*, or Great ant-eater, has the body about three feet ten inches; tail two feet; tongue two feet long, which lies double in the mouth; hair black mixed with grey; it weighs above a hundred pounds; inhabits Guiana and Brazil; runs slowly; swims well; lives on ants, overturning their nests or digs them up with its feet, then thrusts its long tongue into their retreats, and withdraws it into its mouth loaded with prey; protects itself from rain, of which it is afraid, by covering its body with its long tail. Notwithstanding its want of teeth, it is a fierce and dangerous animal. It sleeps in the day and preys by night. Is full grown at four years; bring only one young at a time. Flesh rank, but eaten by the Indians.

The *Didactyla*, or Least ant-eater, is only seven inches and a half long; inhabits Guiana, and climbs trees in quest of a species of ants which build their nest in the branches. The *Pentadactyla*, is thirteen inches long. The *Aculeata*, or Porcupine ant-eater, has the body covered with long sharp spines resembling those of a porcupine; tail very long; size of a rat; inhabits New Holland. The *Capensis*, or Cape ant-eater, is nearly the size of a hog, and weighing almost one hundred pounds; burrows in the ground.

ANTELOPE, a genus of mammalian quadrupeds, consisting of twenty-eight species, distinguished by hollow, persistent, round, twisted spirally, or annulate horns; fore-teeth lower eight; tuskless; inhabitants of all the continents but America, in which none have yet been discovered. They are chiefly found in hilly countries, climb rocks, feed on tender shoots; very gregarious, active, timid, swift; have gall bladders and lachrymal pits under the eyes; a fold of skin divided into cells in the groins, brushes of hair on the knees, and beautiful black eyes; flesh in general good, but some has a rank musky smell. The following are the chief:

The *Rupicapra*, or Chamois, has erect, round, smooth horns; size of a goat; flesh good; inhabits the Alps in troops.

The *Saiga*, or Scythian antelope, has the horns distant, lyre-shaped, almost diaphanous; female hornless; bleats like a sheep; inhabits Poland and Russia; of a balsamic odour; flesh hardly eatable.

The *Gnu*, or Gnou, has the horns bent forwards at the base, backwards in the middle; neck maned; head like an ox; body and tail like a horse; thighs like a stag; the fur and lachrymal duct like the antelope; flesh good; three feet and a half high; six and a half long; fierce, fights with its horns; inhabits the plains of Africa, behind the Cape of Good Hope.

The *Gazella*, or Gazelle, has horns tapering, wrinkled a little, bent inward; body red above, white beneath; runs swiftly up hills; easily tamed; inhabits Persia, India, Egypt, and Ethiopia, in herds. In a variety named *Albomasus*, is found a greenish-blue bezoard, esteemed the real.

The *Oreas*, or Indian antelope, has the horns tapering, straight, spirally carinate; body grey; from five to eight feet high; horns two feet; grows very fat; flesh good; inhabits India, Congo, and the Cape.

The *Sylvatica*, or Wood antelope, has the horns a little spirally twisted, carinate, sharp, smooth, black; from ten to thirteen inches long; body above brown, behind spotted with white, beneath chiefly white; female hornless; three feet high; lives in pairs; flesh good; inhabits woods near the Cape of Good Hope.

The *Cervicapra*, or Common Antelope, has spiral, round, annulate horns; body brown, beclouded with reddish and dusky; less than the deer; inhabits Africa and India.

The *Leucophœa*, or Blue antelope, has recurvate, roundish, annulate horns, twenty inches long; larger than the deer; body above bluish, beneath white; hair long; inhabits the Cape of Good Hope.

Antimonial Powder, in line 8 of this article, for *full* read *dull.*

Antiseptics, in column 2, line 9 from the top, for *cammomile* read *chamomile.*

Ape. See Monkey.

Ape, the Sea. See Morse.

Appetite. At the conclusion of the article, for *Hypochondria* read *Hypochondriasis.*

Aqua Fortis. In the first line of this article for *nitrous* read *nitric.*

Arbor Vitæ. See Tree of Life.

Archangel. See Dead Nettle.

Archil. See Litmus.

Areca. See Cabbage Tree.

ARGENTINE, or *Argentina*, a genus of fishes consisting of four species, two inhabitants of the Red Sea, one the Mediterranean, and one the fresh waters of Carolina. The *sphyræna* is the European argentine, found in the Mediterranean, and sometimes on the British coasts; from two to four inches long; body round, tapering; back and sides pale ash mixed with green; belly fine silvery; air bladder appearing as if covered with silver leaf, and is used in the manufacture of artificial pearls.

ARMADILLO, or *Dasypus*, a genus of quadrupeds consisting of ten species, distinguished by being tuskless, grinders short, cylindrical; in each jaw seven or eight; body covered with a bony shell, intersected by zones: all the species are natives of South America; but the *septemcinctus* is found also in India. They feed on roots, melons, flesh, insects, &c.; rest by day, and wander about by night; burrow in the ground; are gentle, and defend themselves by rolling into a globular form. The females produce monthly; flesh eatable. Their shell, or very curious and complete coat of armour, affords so perfect a defence that when they are coiled up they are almost beyond the reach of danger.

The *Tricinctus*, or Three-banded armadillo, is about a foot long, inhabits Brazil. The *octocinctus*, or Eight-banded armadillo, inhabits also Brazil; flesh delicious. The *longicauda*, or Long-tailed armadillo, is about the size of a cat; inhabits America.

For *Arguebusade water*, read *Arquebusade water*.

ASBESTOS, or *Asbestus*, a genus of talcose earths consisting of carbonate of magnesia, silica, and generally alumina, with frequently oxide of iron. It is dry to the touch, fibrous, soft, light, and floating; brittle in the fire; parasitic. Ten species have been described: *amiant*, Flexible asbestos, or Mountain flax; *mountain cork, mountain wood,* and *mountain leather*, are some of the chief. Some of the varieties of asbestos have been converted into cloth and paper. Asbestos is found in various parts of Europe, and also in Candia and China.

Asterias. See SEA-STAR.

Asthma. Page 69, column 2, line 3 from the bottom, for *stamonium* read *stramonium*.

Attraction. See CHEMICAL AFFINITY.

Auk, or *Alca*. See PENGUIN.

Auricula. See PRIMROSE.

AVOCET, or *Recurvirostra*, a genus of birds comprehending three species, distinguished by a depressed, subulate, recurved bill, pointed, flexible at the top; feet palmate.

The *Avocetta*, or Scooping avocet, is variegated with white and black; bill three and a half inches long; length eighteen inches; feeds on worms and insects; eggs two, white tinged with green, and marked with large black spots; inhabits southern Europe near the sea; in our own country a bird of passage, and seen only for a short time in the months of April and November; it is said that they nestle in some part of France.

The *Americanus*, or American avocet, has the back black, beneath white; seventeen inches long; inhabits North America and New Holland.

The *Alba*, or White avocet, is white, wing coverts brownish; bill orange; fourteen inches and half long; inhabits Hudson's Bay.

AXILLA, in anatomy, the arm-pit.

B.

Baboon. See MONKEY.

Badger, or *Ursus meles*. See URSUS.

Balm of Gilead, a plant. See DRAGON SEA.

Banana. See PLANTAIN.

Banyan. See FIG.

BARBET, or *Bucco*, a genus of birds comprising nineteen species, chiefly inhabitants of Guiana, and almost universally found in warm climates, and very stupid. The bill is strong, straightish, nearly covered with bristles. The *tarmatia*, or Spotted-bellied barbet, is above tawny brown, beneath tawny white, spotted with black; six and a half inches long; inhabits Cayenne and Brazil; flesh insipid. The *elegans*, or Beautiful barbet, is green, head and chin red, edged with blue; quill feathers brown; throat and breast yellow, the latter spotted with red; belly yellow spotted with green; size of a sparrow; inhabits the shores of America. The *zeylanicus*, or Yellow-cheeked barbet, is five and a half inches long; sits on trees, and murmurs like a turtle dove.

Bark. Column 1, line 14 from the bottom, for *tannic* read *tannin*.

Barley water. Page 89, column 1, line 1 from the top, for *stranguary* read *strangury*.

BASIL, or *Ocimum*, a genus of plants comprehending twenty-seven species, mostly natives of the East Indies; the following are those chiefly cultivated: the *basilicum*, or Common sweet basil, with an erect, downy, round stem, leaves pubescent, brownish red, waved, smelling like cloves; flowers white, small, in spiked racemes. Many varieties and sub-varieties. The *minimum*, or Bush basil, is a low, bushy plant, seldom more than six inches high, branching from the bottom, and forming an orbicular head; leaves small, smooth; flowers in whorls towards the top of the branches, smaller than those of the first sort, and seldom succeeded by ripe seeds in our own country; a native of Ceylon, and flowers like the preceding in July and August; it has many varieties, with black, purple, and other coloured leaves. The *tenuifolium*, or Slender-spiked basil, has a stem from one to two feet high, leaves bluntly serrate; a native of Malabar. All these may be propagated from seeds, which should be sown in March, upon a moderate hot-bed, and in May be transplanted into pots or borders. These plants may be also propagated by cuttings, which should be taken off in May, and planted in a moderate hot-bed, watering and shading them of course; in three weeks they will be fit to transplant with the seedlings.

BASTARD CEDAR, or *Bubroma*, a genus consisting of one species, the *gauzuma*, a Jamaica tree, forty feet high, with oblong-hearted, alternate, pointed, serrate, dependent leaves; and racemed flowers.

Bastard saffron. See SAFFLOWER.

Bath. Page 105, column 1, line 13 from the bottom, for *œdematus* read *œdematous*. Same column, line 6 from the bottom, for *rast* read *last*.

BAY.* Pages 108 and 109, the running title should be *Bay*.

Considerable confusion prevails in the descriptions of botanists relative to the *Laurus nobilis*; nor do we know that we can settle their differences; we will, however, state what we know. In this country we have two trees;—one commonly known by the name of BAY, with lanceolate, fragrant leaves, about three inches long; and another commonly known by the name of LAUREL. This last is altogether so very different a plant from the former, as not, in our judgment, to be by any means, as some have hinted, a variety of the *laurus nobilis*. The leaves are very often more than six inches long, and although it is said that the laurus nobilis does not bear fruit in this country, the last tree, when old, does so in great profusion, it being a black oblong berry, in external appearance like the bay berries of the shops. These trees are both ever-greens. The first is much less common than the last.

Beam-tree. See PEAR. It is also described again by mistake under THORN.

Bean, Caper. See ZYGOPHYLLUM.

Bean, Kidney. Column 2, line 2 from the top, for *requires* read *require*: for *grows* read *grow*.

Bean, St. Ignatius's. See SAINT IGNATIUS'S BEAN.

Bear. See URSUS.

BEE-EATER, or *Merops*, a genus of birds comprehending twenty-six species, one only found in our own country; the rest in India, Africa, or the south of Europe.

The *Apiaster*, or Common bee-eater, is chiefly worth describing. It derives its name from subsisting chiefly on bees, wasps, and other insects, which, like the swallow, it catches when on the wing. The head and neck of this bird are chesnut; upper part of the body pale yellow, with reflections of green and chesnut; the lower parts azure, brightening towards the tail; bill quadrangular, a little bent, and sharp at the point; length ten inches; eggs from five to seven, white; gregarious, and found not only in England, but other parts of Europe, Asia, and America.

The other species do not essentially differ, as far as they have been observed. The *Viridis*, or Indian bee-eater, inhabiting Bengal, is one of the handsomest, of which there are several varieties.

BEEF-EATER, the AFRICAN, or *Buphaga*, a genus consisting of one species only, an African bird, having a straight bill; it is found near the river Senegal; eight and a half inches long; picks holes in the backs of cattle, for the purpose of getting at the larva of the gad-fly.

Bee-sting. See POISONS.

BEN-NUT, a whitish nut, about the size of a small filbert, of a roundish triangular shape, including a kernel of the same figure, covered with a white skin. It is the fruit of the *guilandina moringa*. See NICKAR. This nut yields, by expression, a fine oil, called *oil of ben*, or benen. This oil is prepared in the Levant, Egypt, Syria, and Italy. On account of its remaining free from rancidity for many years, it is used in perfumery as the basis or vehicle for receiving the fragrant scents of various flowers, which yield little or no essential oil by distillation, but impart their fragrance to expressed oils. The method of impregnating the oil of ben with the odour of various flowers is, to dip some fine carded cotton in the oil, and put it in the bottom of a proper vessel: on this is spread a thick layer of the fresh flowers, above which more oiled cotton is placed; and thus alternately flowers and cotton are disposed, till the vessel is full. Being covered close, it is to be digested in a water-bath during twenty-four hours, when the oil will receive the odour of the flowers. In Italy the oil of ben is much used for cerates and liniments in pharmacy.

Betel. See PEPPER.

BEZOARD, or BEZOAR, a peculiar concretion found in the bodies of certain animals, chiefly those having cloven feet and horns:—the gazelle, antelope, the goat, the pard, and chamois, or Peruvian goat, most commonly afford it; but it is occasionally obtained from the porcupine, wild boar, tortoise, horse, mule, dog, beaver, rhinoceros, elephant, and even man himself. These concretions, or *bezoar stones* as they are sometimes called, were formerly in the materia medica, but are now wholly neglected.

Bite of a mad dog. Page 145, Col. 2, line 6 from the bottom, for *alisema* read *alisma*.

On this subject see also our article HYDROPHOBIA.

Bitter-wood tree. See QUASSIA.

Bitumens. Page 148, Col. 1, line 18 from the top, for *mellitite*, read *mellilite*.

Black cap. See WARBLER.

Black drop. See QUACK MEDICINES.

Bladder. Col. 1, line 13, from the top, for *uterus* read *ureters*.

Blende. See ZINC.

BLENNY, or *Blennius*, a genus of fishes consisting of eighteen species, distinguished by having a lanceolate, mucous, compressed body; they may be subdivided into, crested heads,—heads not crested. The following are the chief: The *galerita*, or Crested blenny, with a brown body, length four or five inches; dorsal fin extending from the head almost to the tail; found in the European seas. The *cornutus*, or Horned blenny, found in India. The *orellaris*, or Orellate blenny, eight inches long; flesh eatable; found in the Mediterranean. The *phycis*, or forked hake of Pennant; two varieties, one a foot long, the other five inches; body ashy brown. The *trifurcatus*, or Trifurcated hake; found near Beaumaris. The *gunnelus*, or Spotted blenny, has the dorsal fin with ten ocellate spots. Two varieties, one nine, the other six inches long; flesh not very good. The *viviparus*, or Viviparous blenny, is viviparous, and brings forth from three to four hundred young at a time; fifteen inches long; inhabits the deep European seas; flesh coarse, hardly eatable; body mucous, varied with yellow and black, and covered with white scales edged with black.

BLOOD-FLOWER, or *Hæmanthus*, a genus comprehending fourteen species, all Cape plants, except one indigenous to Sierra Leone. The following are the chief: The *coccineus*, or Cochineal blood-flower, the leaves of which are produced in the autumn, continue through the winter, and decay in the spring; the plant through the summer being leafless; the flowers precede the leaves in the autumnal season. The *multiflorus*, a native of Sierra Leone. The *catinatus*, has linear leaves, with a hollow like the keel of a boat; flowers paler than the coccineus.

Blue vitriol. Page 163, Col. 2, line 7 from the bottom, for *opthalmia*, read *ophthalmia*.

Boa. See SERPENT.

Boar. See SWINE.

BOAT-BILL, or *Cancroma*, a genus of birds consisting of two species, as follow: The *Cochlearia*, or Crested boat bill; body ash colour, belly rufous; length twenty-two inches; crest, long, pendulous, pointed; perches on trees, which hang over water, and darts down on fishes as they swim underneath; a second variety, with body spotted with brown; inhabits South America. The *Cancrophaga*, or White-bellied boat-bill is crested, body rfuous, brown, belly whitish, crown black; inhabits Guiana and Brazil; by some regarded only as a variety of the first species.

BOAT-FLY, or *Notonecta*, a genus of hemipterous insects, consisting of seventeen species, which live in stagnant waters and prey on aquatic animalcula. They are distinguised by having an inflated snout; antennas shorter than the thorax: wings four folded crosswise, coriaceous on the upper half; hind legs hairy, formed for swimming. This genus derives its name from the singular manner in which it swims on the back, presenting the belly uppermost. The insects of this genus chiefly inhabit Europe; one or two are found in South America; three, the *glauca*, or Grey, the *striata*, or Striated, and the *minutissima*, or Small boat-fly, are common to our own country. The first is of a pale colour mixed with black, and is very common upon stagnant waters.

BOTT. *Oil of turpentine* has lately been recommended as a powerful remedy for these worms. See TURPENTINE, and WORMS.

Box-tree, Page 178, for *suffrutios*, *a dwarf*, read *suffruticosa, dwarf*.

Brain, dropsy of in horses. Page 180, for *animalculæ*, read *animalcula*.

BOTANY BAY GUM, or *Resina lutea novi belgii*, a resinous substance, obtained from a low small plant growing in New Holland, and is generally dug up out of the soil under the tree. It has been recommended in a variety of complaints, such as flatulence, heartburn, pains in the stomach, &c.; but concerning its medicinal powers, further information is very desirable.

BRAZIL-WOOD, a wood obtained from the *cæsalpina brasilensis*, a species of the genus CÆSALPINA, of which nine have been described: they are natives of the East and West Indies and South America. The chief are the first-named species, which is of considerable value on account of the utility of its wood in dyeing a red colour; see DYEING; and the *mimosa* or *mimosoides*, a sensitive plant like the mimosa tribe, a native of the East Indies.

Bread. Page 183, Col. 2, line 8, from the top, for EDLINS, read EDLIN.

BREWING. Page 202, Col. 2, for *Burton ale contains of alcohol per cent by measure*, read *Burton ale contains by measure*. Page 203, Col. 1, line 24, for *criteron* read *criterion*. See HOP in Appendix.

Buckthorn. Page 214, Col. 1, line 6, from the bottom, after buckthorn place a period. Col. 2, line 15, from the top for *infectorious* read *infectorius*.

BUG, or *Cimex*. We merely mention this genus here to observe that it is the most numerous in entomology, consisting of more than eight hundred species, scattered over the globe.

Bruises. See WOUNDS.

Brunswick black See VARNISH.

Bunting. See SNOW BUNTING.

Burn. See LINIMENT.

Burnet. Page 225, Col. 2, line 4 from the bottom, for *scowered*, read *scoured.*

Butcher bird. See SHRIKE.

Butter. Page 232, Col. 1, line 15, from the top, for *parts* read *part.*

Butter cup. See CROW FOOT.

BYSSUS, a genus of plants consisting of twenty-one species, most of them natives of Great Britain, found generally on old walls, and rotten wood, but often spreading largely over damp ground It has some resemblance to the amiant, or asbestos, in one of its species, especially in being incombustible, and hence denominated *byssus asbestos* ; it is found largely on the Swedish mines of Westmanaland.

C.

Cabbage-tree bark. Line 6, for *infect* read *infest.*

CADE, a cag, cask, or barrel. A cade is also a vessel containing 500 red herrings, or 1000 sprats.

Calf. Page 245, column 2, line 14 from the bottom, for *scowering*, read *scouring.*

Cachalot. See SPERMACETI WHALE.

Calabash-tree. See GOURD-TREE.

Caltrop. See WATER CALTROP.

Camel's hay. See SPIKENARD.

Camline. For GOLD and PLEASURE, read GOLD of PLEASURE.

Canal. Lines 15 and 16, for *below Blackwall*, read *at Limehouse.*

Canary-bird. For FRINGILLA, read FINCH.

Candleberry myrtle. Column 1, line 16 from the bottom, for *was*, read *were.*

Candour. For *ingenuousnes*, read *ingenuousness.*

Cane. See RATTAN.

CANKER, a term applied by the vulgar to some ulcerations of the mouth. When the complaint is local, it may be, in general, healed by such applications as simple tincture of myrrh, or the preparation of borax, honey, and tincture of myrrh, mentioned under INFANCY, section *thrush.* When the disease is only a symptom of some other complaint, attention must, of course, be paid to the primary disorder.

Carnivorous. Page 265, col. 1, line 4 from the top, for *graminivorous* read *granivorous.*

Carriage. Page 267, col. 1, line 3, for *an*, read *can.*

Carolina bean. See WILD LIQUORICE.

Carrion beetle. See SILPHA.

Carrion flower. See STAPELIA.

Carthamus. See SAFFLOWER.

Cassowary. See OSTRICH.

CAT-FISH. Several species of the genus *silurus*, or SILURE, see that article, are thus named. They abound in the river Ohio, in North America ; they are voracious fish ; easily caught ; flesh good.

Catarrh. At the conclusion of the article, read, see PULMONARY CONSUMPTION.

CATCH-FLY, or *Silene*, a genus of plants consisting of seventy-two species, thus subdivided ; petals crowned at the throat ; flowers lateral clustered ; —corol crowned ; flowers from the fork of the stem ;—corol crowned, flowers terminal. The following are cultivated :

The *Armeria*, Common, or Lobels, the *quinquevulnera*, or variegated, the *pendula*, or Pendulous, the *muscipula*, or Spanish, the *undiflora*, or Green-flowered, the *nutans*, or Nottingham, and the *fruticosa*, or Shrubby Catchfly. The annual and biennial sorts may be raised by seeds; the shrubs by slips or cuttings.

CATTERPILLAR, or *Scorpiurus*, in botany, a genus embracing five species, natives of Barbary, and the South of Europe. The *Vermiculata*, or Common, the *muricata*, or Two-flowered, and the *fulcata*, or Furrowed caterpillar, are cultivated. They may be raised by seeds, and are chiefly so, for the singularity and curiosity of their pods

Cavy. See GUINEA-PIG.

Celery, page 280, column 2, line 16 from the top, for *hypochondriaca*, read *hypochondriacal.*

Celibacy, line 24, for sense *are*, read sense *is*.

Centipede. See SCOLOPENDRA.

CENTRISCUS, a genus of fishes consisting of three species, having the head lengthened into a very narrow snout; mouth without teeth; body compressed. The *scutatus*, has the back covered with a smooth bony shell of a golden hue, the plates closely united; the hind part armed with a long spear-like point; from six to eight inches long; inhabits the Indian seas. The *scolopax*, has the body pale red, broad, rough, with hard, pointed, closely imbricate scales; nine inches long; flesh eatable; inhabits the Mediterranean. The *valisatius*, has the body oblong, lanceolate, with small recumbent bristles at the nostrils; above yellowish grey; two inches long; found in Amboyna.

CEPOLA, a genus of fishes, consisting of three species, having the teeth curved in a single row; body uniform, naked; belly hardly as long as the head; inhabitants of the Mediterranean; four or five feet long; flesh hardly eatable.

CHÆOTODON, a genus of fishes, comprehending sixty-eight species, inhabitants of the American or Indian seas and fresh waters, many of them exhibiting a beautiful display of colours; the flesh of most of them good, and of some delicious. The *Rostratus*, or Shooting chæotodon, is chiefly deserving of notice for the extraordinary manner in which it obtains the possession of the flying insects which constitutes its food; when it observes one of these, either hovering over the water or seated on some aquatic plant, it shoots against it, from its tubular snout, a drop of water with so sure an aim as generally to lay it either dead or stupified on the surface of the stream; the distance which it takes from the insect is from four to six feet. Other species of this genus have also the same faculty. The form of the greater number of this genus is ovate, with a deep compressed body; but some of them, the *Orbicularis* and *Imperialis* in particular, are nearly round, and resemble a flat fish.

Chagreen. See SHAGREEN.

CHALCEDONY, a genus of earths, consisting of silica, a small quantity o alumine, with sometimes about a tent of lime, and a slight trace of oxide o iron. It is hard, lightish, shining withi never opake, tough, admitting a hig polish. Besides chalcedony so called *Cacholony*, *Cornelian*, *Mocha stone* *Sardonyx*, *Onyx*, *Chrysoprase*, and *Heliostrope*, are species of chalcedony These are found in various parts of th world: common chalcedony is found i Cornwall and the Hebrides.

Chamæleon. See LIZARD.

Chamois. See ANTELOPE.

CHATTERER, or *Ampelis*, a genu of birds of which there are fourtee species; they are all natives of Afric or America, except the *Garrulus*, o Waxen chatterer, which is sometime met with in our own country, which i size resembles a starling; it is said t appear annually about Edinburgh, a to feed on the berries of the mountai ash; it is also said to breed in parts mor northerly, and to form its nests in th holes of rocks.

Chenopody. See GOOSE FOOT.

CHICKWEED. This is a triv name given to several genera of plant For another chickweed, see WINTE GREEN. *Holosteum* is also a genus t which the name chickweed has bee given; it consists of five species, all n tives of America or the West Indie except one, the *Umbellatum*, so calle from its flowers being in umbels, and which is found wild on the walls of our own country.

China root. See SMILAX.

Clavicle. For the letter S read *ſ*.

Clematis. Line 2, for *Toy* read *Joy*.

For *Coculus Indicus*, read *Cocculus Indicus*.

CINERARIA, or FLEA WORT, a genus of plants comprising fifty-three species, chiefly natives of the Cape and South of Europe. The *Palustris*, is indigenous to our marshes, and the *Integrifolia* to our mountains. A third of these have flowers without rays, the rest have radiated flowers; the exotic species are propagated by cuttings.

Cistus, the Marsh. See ROSEMARY THE WILD.

Cleaning of clothes. For *Scowering* read *Scouring*.

Cloth. For *Scowering* read *Scouring*.

Cod. Col. 1, line 20 from the top, for *Zorsk* read *Torsk*.

Columbium. See TANTALUM.

Company, Page 345, Col. 2, line 10 from the top, after *contribute* add *to*.

Condor. See VULTURE.

CONFERVA, a genus of plants consisting of one hundred and six species, chiefly found on stones in slow streams, on the sides of cisterns and the surface of ponds. They consist of herbaceous tubes or fibres, mouth separated internally by transverse positions; seeds scattered through the joints, or produced in solitary closed tubercles attached to the fibres. Numerous as is the family of the Confervas, there is scarcely an individual which, upon minute examination, does not appear highly elegant and beautiful. Amongst these, the *Biddulphiana*, found near Southampton, of a pale green colour; the *Castanea*, or Creeping chesnut-coloured conferva; the *Nigrescens*, Blackish, or Compound jointed conferva; and the *Lichenicola*, or Red lichen conferva, all indigenous to some parts or other of this country, are deserving notice. The *Rivularis* has been recommended, on account of the great quantity of oxygen which it contains, in spasmodic asthma.

Contagion. Page 352, column 2, line 22 from the top, for *person* read *poison*.

Cornu ammonis. See SNAKE STONE.

Coronilla. See BLADDER SENNA.

CORUNDUM, a term under which certain mineral substances have been included, composed of alumina nearly pure. *Perfect corundum* occurs crystallized in six-sided prisms, transparent and colourless. Its specific gravity is about 4. When blue it constitutes the *sapphire*; when red the *ruby*; when yellow the *oriental topaz*, or *chrysolite*. They are mostly procured from Ceylon and Pegu; some have been also found in France and Bohemia.

Costiveness. Page 367, column 1, line 25 from the bottom, for *by* read *in*. 367, column 2, line 17 from the top, for *cure* read *case*.

COURIER, or *Corrira*, a genus of birds, consisting of one species only, having a straight short bill, without teeth; thighs longer than the body; feet four-toed, palmate; less than the curlew, and runs swiftly; inhabits Italy.

Cow-pox. Page 376, column 2, line 9 from the top, after *and* add *note*.

CRANE BILL, or *Pelargonium*, a genus of plants consisting of one hundred and twenty-three species, one or two natives of Australasia, the rest Cape plants. They may be thus subdivided: —stemless, root rapaceous, umbel compound;—nearly stemless, root tuberous;—herbaceous, or somewhat shrubby;—shrubby, leaves undivided, not angular;—shrubby, leaves angular, lobed or palmate;—shrubby, leaves three cleft and ternate;—shrubby, leaves pinnatifid and pinnate;—shrubby, leaves decompound and more than decompound.

A great number of the species of this genus are cultivated in our gardens, many of them having flowers nearly resembling the geranium. They may all be increased by seeds sown in pots in kitchen-garden mould, in an early part of the spring, and plunged into a hot bed. As they grow up they should be gradually accustomed to the open air, in order to be placed out in the summer season in sheltered situations. The shrubby sorts are, however, more commonly increased by cuttings like the geranium. All are highly ornamental either in the green-house or pleasure grounds.

Cranefly. See FATHER-LONG-LEGS.

CREEPER, or *Certhia*, a genus of birds consisting of seventy-seven species, dispersed through most of the countries of the globe; they feed chiefly on insects, in search of which they creep up and down trees; breed in hollow trees, and lay numerous eggs; bill arched, slender, somewhat triangular, pointed; feet formed for walking. The two following are chiefly deserving notice.

The *Familiaris*, or Common creeper, is grey, beneath white; quill feathers brown; runs with wonderful facility, above or under the branches of trees; another variety differing only in being of a large size.

The *Sannis*, or Mocking creeper, inhabits New Zealand; seven and a quarter inches long; imitates the notes and voice of other birds with surprising accuracy, whence its name.

CROWN, a silver coin, value five shillings.

CROWN IMPERIAL, or *Fritillaria imperialis*, a well-known singular and beautiful flower, a species of fritillary, which blossoms in April. Several varieties, one with yellow flowers; those with double flowers are most valuable. They are propagated by seeds; but best by offsets from the roots.

CURASSOW, or *Crax*, a genus of gallinaceous birds, comprehending five species, having the bill strong, thick, and the base of each mandible covered with a cere, all inhabitants of South America, and as follow: The *alector* is above black, belly white, cere yellow, three feet long; three other varieties; feeds on fruit, roosts in trees; inhabits the mountainous woods of South America. The *globicera*, or Globose curassow, has the body blackish blue, lower part of the belly white; inhabits Guiana; size of the last. The *pauxi*, or Cashew curassow, has the cere blue; body blackish; belly and tip of the tail white; size of the two former; inhabits New Spain. The *galeata*, or Galeated curassow, has the crown with a horny cone; body black: nearly as large as a Turkey; inhabits the island of Curassow, or Caraçoa. The *vociferans*, or Crying curassow, is brown, belly whitish; bill and breast blue; size of a common fowl; a noisy clamorous bird; inhabits the mountainous parts of Mexico.

Curassow, the piping. See PENELOPE.

Curucui. See TROGON.

Custard-apple. See SWEET APPLE.

CYANOGEN, called by Dr. URE, in his lately published dictionary, PRUSSINE, or PRUSSIC GAS, and defined by him, the compound base of the Prussic acid. See PRUSSIC ACID.

Cypress. Line 5, for *cyprus*, read *cypress*.

D.

DAHLIA

DAHLIA, a genus of plants consisting of two species; the stems die every winter, but the root is perennial and tuberous. They afford a great number of splendid flowers, rising majestically and blossoming late in the autumn. They are natives of the mountainous parts of the Spanish settlements of South America.

The *Superflua* yields purple, scarlet, and rose-coloured varieties. The *frustranea* saffron-coloured and white. Occasionally, most of these are procured with double, or semidouble flowers. The roots are taken up in autumn, and kept in a dry place till the spring. In April, the more choice kinds should be planted in pots, so as to have their growth forwarded in a frame, or green-house. In June they may be planted out: a rich border is not desirable, the flowers being more brilliant in a poor soil. If the plants are luxuriant, the flowering is impaired; this disposition may be somewhat checked by pinching off some of the secondary branches while young and tender. After the flower bud has appeared, little water should be given to the plants, even though the weather be dry. They are propagated by parting the roots.

DARKLING, or *Tenebrio*, a genus of coleopterous insects consisting of eighty-nine species. They are commonly of a dark and sombre colour; some have wings under their shells, while others are apterous. The larves of some of them reside among rotten sticks, or rubbish; others are found in flour and different kinds of food. After they have become perfect insects they enter houses, and devour every sort of provision; their chief resort is damp, dark cellars; as they precipitately avoid light. The *mortisagus* is found among rubbish and dung in gardens; it is of a deep black colour; it emits, as well as some other of the species, a fetid smell. The *mollitor* is found in meal and flour; its larve eaten by nightingales. The *minutus* is black, and, like both the preceding, found in our own country.

Darnel. Line 1, for *Eolium* read *Lolium*.

DARTER, or *Plotus*, a genus of birds consisting of three species; they have a small head and long slender neck, and are chiefly seen in southern climates; they live principally on fishes, which they take by darting forward the head, while the neck is contracted like the body of a serpent.

The *Anhinga*, or White-bellied darter, has the body above black, belly white, head, neck, and breast reddish-grey; two feet ten inches long; builds on trees; flesh oily and rancid; inhabits Brazil.

Melanogaster, or Black-bellied darter, has the belly black; three feet long; inhabits Ceylon and Java. Three or four other varieties found in Cayenne and Senegal.

The *Surinamensis*, or Surinam darter, has the head crested, belly white; thirteen inches long; is domesticated; inhabits Surinam.

Day-fly. See MAY-FLY.

Death, apparent. Line 3, for *chord* read *cord*.

Death's-Head moth. See HAWK-MOTH.

Deer. Page 401, col. 1, line 4 from the top, for *Elephus* read *Elaphus*.

Delphine. See LARKSPUR.

Diachylon. See PLASTER.

Digestion. Page 407, col. 2, line 13 from the top, for *excrementitions* read *excrementitious*.

Dinner. Col. 1, line 22 from the bottom, for *and* read *or*.

DIODON, a genus of fishes consisting of three species, having the body armed on all sides with long, strong, moveable spines, varied with white and black, hollowed within, and covered with the common skin. The *Trystrix* inhabits the Indian seas, and grows to two feet in length; body oblong, pale brown; has the power of erecting and depressing its spines, and of inflating and contracting its body; flesh hard and rank. Of the *Atinga* there are two varieties; from twelve to fifteen inches long; body bluish black, belly white; has the same compressive and expansive powers as the trystrix; inhabits the American seas, and round the Cape of Good Hope. The *Mola* has a compressed body, thicker at the head, truncate behind, and terminating in a longitudinal thin fin, silvery white, growing darker towards the back. Sometimes erroneously called sun-fish.

Diuretics. Line 17 from the bottom, for *stranguary* read *strangury*.

Dodder. Line 11 from the top, for *prasytic* read *parasytic*.

DODO, or *Didus*, a genus of gallinaceous birds, with wings unfit for flight, comprising three species, as follow: The *ineptus*, Dronte, or Hooded dodo, has the head hooded; bill strong, large, and bluish, with a red spot; three feet long, inhabits the Isles of

France and Bourbon. The *solitarius*, or Solitary dodo, is varied with grey and brown; female with a white protuberance each side the breast, resembling a teat; size of a turkey; lays one egg, larger than that of a goose; time of incubation seven weeks; at which process the male and female assist in turn; the young afford delicious food; inhabits the island of Rodrique. The *nazarenus*, or Nazarene dodo, is larger than the swan; black, downy; egg one; inhabits the Isle of France.

DOGWOOD, JAMAICA, or *Piscidia*, a genus of plants consisting of four species, natives of America. The *erythrina*, or Dog-wood-tree, rising twenty feet high, the bark of which, when pounded and steeped in salt water, yields a juice used to intoxicate fishes, is the chief. This species, and one or two others, are occasionally cultivated in our conservatories.

Doree, a fish. See ZEUS.

Dose. See MATERIA MEDICA.

Dotterel. See PLOVER.

Dover's powder. See IPECACUANHA.

DRAGON FLY, or *Libellula*, a genus of insects consisting of fifty-six species, having the mouth armed with jaws more than two in number. The whole genus is exceedingly ravenous, and generally seen hovering over stagnant waters. They lay their eggs by the side of a ditch or pond in the water. The larva remains in nearly the same state for almost a year before it attains its full size. No particular time seems appointed for the metamorphosis into its winged state; the different species are continually emerging from the water, from April to August. They live upon various insects, chiefly butterflies and moths.

The *Grandis* is the largest of this genus found in Britain, and is, perhaps, not inferior in bulk to any insect which this country produces, the stag-beetle excepted. It is a very beautiful animal, but has something terrific in its appearance when on the wing.

The *Forcipata* expands four inches and a half. The *puella* has the body green and azure; sometimes called, from its brilliancy of colours, king-fisher; many varieties. The *virgo* has the wings coloured in a variety of ways, and hence producing many varieties; inhabits our own country, and Europe generally.

Dragon's blood. For *sangus* read *sanguis*.

DRAGON'S HEAD, or *Dracocephalum*, a genus of plants consisting of eighteen species, of which some have their flowers in spikes, and some in whorls; they are natives of the Levant, Austria, or Siberia; and most of them readily propagated by seeds in our own gardens; in which the species most frequently met with is the *canariense*, or Balm of Gilead; hairy at the joints; leaves soft, wrinkled, three or five together, ovate, pointed, toothed; corol flesh colour, with white lines; this last may be also propagated by cuttings.

DRAGONET, or *Callyonymus*, a genus of fishes consisting of seven species; the chief is the *lyra*, or Gummous Dragonet, which has the first ray of the first dorsal fin as long as the body; from twelve to fourteen inches long; feeds on star-fishes, &c.; body tapering rounded; inhabits the Mediterranean and North seas; flesh good.

Drunkenness. See POISONS.

DRY-ROT. Several ships built at Boston, in America, have been salted or filled in between the timbers with salt while on the stocks; and after the lapse of ten or fifteen years the timbers have, in every case, been found perfectly sound. A vessel of 500 tons requires 500 bushels of salt; and two years after being built 100 bushels more should be added to fill up the space of the dissolved salt.

Duck's meat. For *Lemma* read *Lemna*.

Dugong. See MORSE.

Dyeing. Page 443, col. 2, line 13 from the top, for *remains* read *remain*.

Dysury. For *stranguary* read *strangury*.

E.

Eel Electric. See GYMNOTUS.

Egyptiacum. See LINIMENT.

Elaine. See FAT.

Emetic. See IPECACUANHA.

Engraving on steel. See SIDEROGRAPHY.

Epsom salt. See SALT.

EUDIOMETER, an instrument for ascertaining the purity of air, or rather the quantity of oxygen contained in a given bulk of any elastic fluid. Various kinds of eudiometers have been contrived by Priestley, Scheele, De Marti, Humbolt, Seguin, Berthollet; but Sir Humphry Davy's is very simple, and, perhaps, the best. It consists in passing nitrous gas into a saturated solution of green muriate, or sulphate of iron, which becomes opake, and almost black when fully impregnated with the gas. The air to be tried is contained in a small graduated tube, largest at the open end, which is introduced into the solution, and then gently inclined towards the horizon, to accelerate the action, which will be complete in a few minutes, so as to have absorbed all the oxygen. The measure should be taken as soon as this is done, otherwise the bulk of the air will be increased by a slow decomposition of the nitric acid formed. Phosphorus and sulphuret of potash have also been employed in eudiometry.

Evil. See SCROFULA.

Eyes. See LIPPITUDE.

F.

Fascination. See SYMPATHY.

Felon. See WHITLOW.

FENNEL FLOWER, DEVIL IN A BUSH, or *Nigella,* a genus consisting of five species, natives of the south of Europe. They are all annual plants, rising a foot and a half high, and adorned with blue or white flowers. They are cultivated by sowing their seeds in March, on a bed of light earth, where they are to remain.

FEUILLEA, a genus consisting of two species, both climbing plants. The *Trilobata* is a native of the East Indies; the *Cordifolia* is frequent in the inland parts of Jamaica, and is generally found climbing among the tallest trees in the woods. The fruit is a globular corticose, many-seeded pome. This fruit has been lately recommended as a powerful antidote against vegetable poisons. But its efficacy requires confirmation.

After *File Fish,* add, or *Balistes.*

Fistic nut. See PISTACHIA.

Flag, the sweet. For *acoris* read *acorus.*

FLAMINGO, or *Phœnicopterus,* a genus of birds consisting of two species, distinguished by having a naked, toothed bill, bent as if broken; the feet are four-toed, palmate, the membranes semicircular on the fore part.

The *Ruber,* or Red flamingo, has the quill feathers black, body smaller than that of the stork; when erect six feet high from the tip of the toe to the bill; perpetually twists its head round when eating, so that the upper mandible touches the ground; bill seven inches long, partly red, partly black, and partly crooked; legs and thighs slender, and not thicker than the fore-finger of a man, yet two feet long; neck equally slender, three feet long. From this extraordinary shape it is able to wade in water to the depth where its food is found: but, though the feet are webbed, it seldom uses them for swimming; its length from bill to tail is four feet four inches. The plumage of this bird is not less remarkable than its figure, being of a bright flame-coloured red. It is found from the Mediterranean in every district of Africa to the Cape of Good Hope; and also in South America and the West Indies. Their mode of incubation is curious, but we have not room to describe it.

The young never exceed three in number. They are gregarious, and their flesh is by some persons esteemed; they are occasionally tamed in their native climates, and mingle with other poultry; but they never thrive in such a state. They afford a fine down, equal to swan's down.

The *Chilensis*, or Chilese flamingo, has the quill feathers white; bill covered with a reddish-skin; head subcrested; five feet long from the bill to the claws; inhabits Chili.

FLAX-PLANT, or *Phormium*, a genus consisting of one species, the *Tenax*, a native of New Zealand. The leaves resemble those of flags; the flowers are in one variety yellow, in another a deep red. Of the leaves of this plant the New Zealanders, with very little preparation, make all their common apparel, and also their strings, lines, and cordage for every purpose, as well as the whole of their canvas and matting, all which are said to be prodigiously stronger than any thing we can manufacture from hemp. They also make, from the finer parts of the same material, their finest cloths. The seeds of this plant have been tried in this country, but they were not found to vegetate. A further trial of them is very desirable.

FLOG, or *Tabanus*, a genus of dipterous insects, consisting of fifty-two species, inhabiting Europe and America, a few Africa; six common to our own country. These insects live by sucking out the blood of various animals, and especially of horses and black cattle, of which they are very greedy. The larves are found underground in moist meadows. The *bovinus*, or Ox-fly, has greenish eyes, back of the abdomen with white, triangular, longitudinal spots; found in our own country, and very troublesome in summer to cattle. The *Pluvialis*, a small insect that fixes on the hands, face, and legs, exciting painful inflammation in the part whence it has drawn blood; the *Cæcutiens*, alike troublesome, may be also mentioned.

FLY-CATCHER, or *Muscicapa*, a genus of birds consisting of ninety-six species, scattered over the warmer tracts of the globe; the greater number inhabitants of Australasia and Polynesia. Two only common to our own country. The following are the chief:

The *Aëdon* is rusty brown, beneath yellowish white; size of the reed thrush; sings delightfully during the night; inhabits Dauria.

The *Grisola*, or Spotted fly-catcher, is brownish, beneath whitish; neck longitudinally spotted; five and a half inches long; builds in holes of walls, or hollow trees; eggs pale, spotted with reddish; fond of cherries; appears in England in the spring, and retires in August.

Fool's stones. See ORCHIS.

FOOT, in anatomy. See METATARSUS and TARSUS. For foot, a measure, see WEIGHTS AND MEASURES.

Fractures. See WOUNDS.

G.

GALL-FLY

GALL-FLY, or *Cynips*, a genus of insects consisting of thirty-five species, a few found in India, the rest in Europe, and chiefly in the oak, the different parts of which, especially the buds and leaves, are inhabited by ten distinct species of this genus. The most beautiful gall is said to be the production of the *cynips quercus gemmæ*. See GALL.

Gaper. See MYA.

Garlic. Page 542, col. 1, line 28 from the top, for *Escalonecum* read *Escalonicum*. After Welch onion, add, the *Porrum*, or Leek. See LEEK.

Gazelle. See ANTELOPE.

Gilt-head. See PUDDING-FISH.

Gonorrhœa. Page 561, col. 2, line 21 from the bottom, for *exuberations* read *exulcerations*.

Goosander. See MERGANSER.

GOOSEBERRY, the AMERICAN, or *Melastoma*, a genus of plants comprehending eighty-five species, nearly all natives of the West Indies or America; a few of India. They consist of shrubs, with leaves beautifully variegated with gold, white, yellow, and russet colour; on which account several species are introduced into our greenhouses, and propagated by cuttings which succeed better than seeds.

Gout. Page 565, col. 1, line 11, for *decomposition* read *deposition.*

Green copperas. See SULPHATE OF IRON.

Groundling. Line 3, for *locke* read *loche.*

Gruel. See OATS and SUPPER.

Guan. See PENELOPE.

GUAVA, or *Psidium*, a genus of plants comprehending eight species, natives of the East and West Indies, and South America. The two following are cultivated: the *pomiferum*, Red, or apple guava, having a thick trunk, twenty feet high, branchy, with smooth bark, leaves oblong, lanceolate, and flowers with large white petals; the fruit is pomegranate shaped, crowned, and, when ripe, has an agreeable fragrance; a native of both the Indies. The *pyrifera*, White, or pear guava, is the size of a moderate apple-tree; wood very hard and tough, used for ox-yokes, and other articles of agriculture; flowers white and fragrant; fruit the size of a hen's egg, the pulp of which is flesh-coloured, aromatic, and agreeable; a native of both the Indies. The apple species, in consequence of its fruit having a fine acid flavour, is most cultivated; the fruit of the pear species is sweet, and, in warm climates, not so agreeable. These plants are increased by seeds, which must be procured from their native soil; they must be sown in pots filled with rich kitchen-garden earth, and plunged into a tan bed.

Guinea Hen. Line 4, for *Melagris* read *Meleagris.*

Gum. Page 585, col. 1, line 3, for MIMOSA read SENSITIVE PLANT.

H.

HAG-FISH, GLUTINOUS HAG, or *Gastrobanchus,* a genus of fishes consisting of one species only, the *Cæcus,* so named from its being totally destitute of eyes; it inhabits the ocean, is about eight inches long, and is said to enter the mouth of fishes when taken by the hook, and to devour the whole, except the skin and bone. When placed in a vessel of sea water it soon renders the whole glutinous, being of an uncommonly glutinous nature.

Hare's Lettuce. See SOW'S THISTLE.

Hatchet Vetch, or *Coronilla securidaca.* See BLADDER SENNA.

Hedysarum. See SAINFOIN, FRENCH HONEY SUCKLE, and MOVING PLANT.

Hellebore, the white. Col. 2, line 9 from the bottom, for *hepatic* read *herpetic.*

Hemlock-tree. See PINE.

Hepatica. See TRINITY.

Hiera Picra. See POWDERS.

Hip-joint. For *ilum* read *ilium.*

HISTER, a genus of coleopterou insects, consisting of twenty-four species, natives of Europe, Africa, America, and Australasia; five natives of this country.

The *Unicolor,* found in gardens, and the *Bimaculatus,* found in dunghills, are the chief; this last has the appearance of a small beetle.

Hoffman's Anodyne liquor. See SPIRIT.

Hook. See BILL and HUSBANDRY.

HOP. We have, under BREWING, hinted our suspicions relative to the antiseptic properties of hops. We are glad to observe that Dr. IVES, of New York, has lately excited attention to this subject, by publishing an account of a series of experiments on the hop, a detail of which will be found in the *Annals of Philosophy* for March, 1821, or an abridged account in the *London Journal of Arts* for April of the same year.

By these experiments it appears that

the virtues of the hop reside in a fine powder, which is readily separable by merely drying, and afterwards threshing in a bag, the leaves or strobiles. This powder Dr. Ives calls **Lupulin**; of this, on analysis, 120 grains are found to consist of

Tannin	5
Extractive Matter	10
Bitter Principle	11
Wax	12
Resin	36
Woody fibre, or Lignin	46
	120

The proportion of lupulin in the hop is found to be about one-sixth of its weight. Nine ounces of lupulin were found to answer equally as well for beer as five pounds of dried hops. Lupulin, according to Dr. Ives's experiments, contains a very subtile aroma, but no essential oil whatever. The aromatics and bitter properties of lupulin are yielded both to water and to alcohol, more completely to the last, and much sooner to both when they are hot than when cold; the aroma is rapidly dissipated at a high heat. About five-eighths of lupulin are soluble in water, alcohol, and ether; the three remaining eighths being vegetable fibre.

The taste of lupulin is exceedingly bitter, but not unpleasant, whereas the nauseous extractive matter of the leaves which, by boiling, is imparted to beer, is unpleasant to the taste, and, when highly concentrated, is frequently ungrateful to the stomach.

As a medicine, Dr. Ives recommends a concentrated alcoholic solution, in doses of from 40 to 80 drops, to induce sleep with as much certainty as opium, in cases of long watching from nervous irritability; but the same cannot be said of it in relieving pain.

Although we can by no means consider these experiments as decisive, relative to the economical and medical properties of the hop, they are most certainly deserving attentive consideration.

Horse radish. Last line of the article, for *stranguary* read *strangury.*

Hydrate. See Water.

Hypochondriasis. Page 643, col. 2, line 18, after *in* add *these.*

HYPOCHONDRIUM, in anatomy, that part of the body which lies under the cartilages of the spurious, or short ribs.

I.

Ignatius's Bean. See Saint Ignatius's Bean.

Indian Cress. See Tropæolum.

Indian Pink, a flower; see Quamoclit.

Inga. See Sensitive Plant.

IRON WOOD, or *Sideroxylon,* a genus of plants consisting of nine species, chiefly natives of the Cape, and other parts of Africa; one of New Holland, two of America. The name is derived from the closeness of the wood, which is so solid and heavy as to sink in water. Two of the species are cultivated: the *inerme,* or Smooth iron-wood, which rises to the height of an apple-tree in Africa; and the *lycioides,* or Willow-leaved iron-wood, a native of South America. These may be increased by seeds procured from abroad, sown in the spring, in pots filled with fresh mould, and plunged into the tan-bed of the stove. They are sometimes raised from slit layers and cuttings, in the summer; the first requires the protection of the green-house; the second is hardier, and may sometimes be exposed, in sheltered situations, to the shrubbery borders.

Iron-wort. See Wound-Wort.

Ivy-tree, American. Expunge the article, and see Laurel.

J.

JABIRU, or *Mycteria*, a genus of birds comprising three species, distinguished by a bill sharp-pointed, a little bending upwards; tongue small, or tongueless; feet four-toed, cleft; they are the following:

The *Americana*, or American jabiru, is white, the plumage on the neck excepted, which is red; quill and tail feathers purplish black; one of the largest of the birds of Guiana, being more than four feet high, and six in length from the beak to the claws. The large black bill of this bird is a formidable weapon, being above thirteen inches long, and at the base three in thickness; flesh reckoned by the natives good; this bird feeds on fishes chiefly, but it destroys serpents and other reptiles; it is gregarious and migratory; eggs two; builds its nest in trees, hanging over water.

The *Asiatica*, or Indian jabiru, is also white. The *Novæ Hollandiæ*, or New Holland jabiru, has the body above purplish-green, beneath, neck, and shoulders white; tail black and white; inhabits New Holland.

Jacana. See PARRA.

Jacob's Ladder. See VALERIAN.

JASMINE, the ARABIAN, or *Nyctanthes*, a genus consisting of one species only, an Indian shrub, with rugged branches, square stem, and opposite, ovate, pointed, entire leaves. It is a highly ornamental and fragrant plant, and may be increased by layers or cuttings.

Jasmine, Essence of. See STORAX.

JERBOA, or *Dipus*, a genus of mammalian animals consisting of ten species; in their habits they much resemble the dormouse. The following are the chief: the *Jaculus*, Alagtago, or Common jerboa, has the hind legs three times as long as the fore, and are used after the same manner as the kangaroo; hair above pale brown, beneath white; body seven inches long; tail ten; burrows in the ground; not easily tamed; flesh eaten by the Calmucs and Arabians; inhabits Egypt, Arabia, and South Siberia. The *Cafer*, or Cape jerboa, is above bright chesnut, beneath yellowish white; fourteen inches long; tail fifteen; flesh eaten by the natives; inhabits the Cape. The *Meridianus*, or Torrid jerboa, only five inches long, is found near the Caspian sea. The *Tamariscinus*, or Tamarisk jerboa, is also found near the same sea; an elegant animal; colour yellowish grey, beneath white; five and a half inches long; tail the same length. The *Canadensis*, or Canada jerboa, is the size of a mouse; inhabits the coldest parts of Canada.

Jessamine, the Scarlet. See TRUMPET FLOWER.

John Doree. See ZEUS.

Jujube. See LOTUS.

K.

KALEIDOSCOPE, an optical instrument, which has lately excited much public attention, and for which a patent was obtained about three years since by Dr. BREWSTER. It is said, however, that the invention is not a new one; that a person named Bradley, a gardener at Hampton Court, mentions such an instrument in a work published by him more than one hundred years ago. The method in which the kaleidoscope is made, is very simple: take a hollow tube of any dimensions and of any length; two inches in diameter, and twelve inches long, is a convenient size; take two pieces of plate glass, about one inch and a half wide and one line in thickness, and of a length somewhat shorter than the tube itself; and let them be fixed so that one edge may touch the other, and so as to form an angle with each other of 22½ degrees;

a few bits of cork may be so notched as to keep the pieces of glass in their places; the glasses are to be darkened by black painting or some other convenient method, on the exterior sides. At one end of the tube provide two circular pieces of plain clear glass, exactly the diameter of the tube, into which they must be fitted. Place between these two glasses a quantity of broken pieces of different coloured glass; the more intense and various the colours the more brilliant will the forms be; and let the pieces of broken glass be so placed as to move freely as the tube is turned round. At the opposite end of the tube let there be a small hole for the sight: the instrument thus arranged will be complete; and upon looking into it in a proper light, and turning it slowly round, a succession of beautiful forms will then be visible, which, till experienced, would be believed absolutely impossible to be produced by any art or contrivance of man.

The uses to which this instrument may be put it is not easy to enumerate; it can never cease to be a constant source of amusement and delight; and in suggesting a variety of new patterns for fancy work of various kinds, it is inexhaustible.

KANGAROO, or *Macropus*, a genus of mammalian animals, consisting of two species, distinguished by having the fore legs very short, the hind legs very long; the female has also an abdominal pouch

The *Major*, or Great Kangaroo, has a long thick tail; hind feet three times as long as the fore; three toed; body large yellowish grey; when full grown as large as a sheep; leaps; burrows; eats like a squirrel; feeds on fruit and vegetables; flesh excellent. In its natural state it is extremely timid, and springs from the sight of mankind, by vast bounds of many feet in height, with great velocity and to a surprising distance. The female has two breasts in the pouch with two teats on each; yet she is not known to produce more than one young at a time; and so exceedingly diminutive is the young when first found in the pouch as scarcely to exceed an inch in length. By what means it is introduced there, still continues as much an object of inquiry as in the case of the opossum tribe, under which the kangaroo was indeed, till lately, arranged. The young continues in the pouch till it is grown to a large size. This animal may now be considered as in a considerable degree naturalized in England: several having been kept for some years in the royal domains at Richmond, which have, during their residence there, produced young, and seem to promise to render this most elegant animal a permanent acquisition to the country. It is a native of Australasia.

The *Minor*, or Kangaroo rat, is about the size of a rabbit, fur smooth, dark brown; it has the general appearance of the first species, but is far less elegant; inhabits also Australasia.

King-fish. See ZEUS.

King's Evil. See SCROFULA.

KNAPWEED, or *Centauria*, a genus of plants comprehending one hundred and twenty-one species, scattered over Europe, Asia, and Africa; several are indigenous to the hedges and corn-fields of our own country. The *Cyanus* is the blue-bottle of our corn-fields. See BLUE BOTTLE.

L.

Lacker. See VARNISH.

Lapwing. Page 695, Col. 1, line 5 from the top, for *Puerr* read *Purre*.

Lavender, the Sea; line 15, for *spleciosa* read *speciosa.*

LAVER, a species of the genus ULVA, of which forty-one have been described; twenty-five are indigenous to our own country. They are all sessile and without shoots, and grow in ditches and on stones on the sea coast. The *Umbilicalis* is sometimes pickled with salt and preserved in jars, and afterwards stewed and eaten with oil and lemon juice. The species called laver, or navel laver, is flat, orbicular, sessile, and coriaceous: *potted laver* is a favourite dish in some of the western districts of the kingdom, and in Wales; and is occasionally sent to London.

Leamington water. See MINERAL WATERS.

LINE, a measure. See WEIGHTS and MEASURES.

Linea alba, line 3, for *scrobioulus* read *scrobiculus*.

Long pepper. See PEPPER.

LOTUS, or *Bird's-foot trefoil*, is a genus comprising thirty species, chiefly natives of Europe; a few of the Levant and Palestine; two common to our own country. They may be thus sub-arranged:—legumes few, not forming a head,—peduncles many flowered, in a head. Some of the species are annual, others perennial plants; many of which are propagated by seeds; others, natives of warm climates, are best increased by cuttings; and some admit of being propagated either way.

Love in Idleness. See VIOLET.

Lupulin. See HOP.

M.

Mad-apple; for SOLANUM read NIGHTSHADE.

Magnesia; Page 750, Col. 2, line 18 from the bottom, for *found* read *poured*. Page 751, Col. 1, line 18 from the top, for *anti* read *ant*.

Magnet; for *ferrun* read *ferrum*.

MAGNETISM. Some interesting discoveries relative to this subject have been lately made public, which will lead, most probably, to further developements of this hitherto obscure subject. Professor OERSTED, of the University of Copenhagen, has made a series of experiments on the *Influence of the Voltaic pile upon the magnetic needle*, He used the powerful voltaic battery of Professor de la RIVE, consisting of 389 pieces of plate, six inches square. He found that by always placing the conducting wire *vertically*, but alternetely varying two circumstances: *first*, the relative position of the voltaic poles, and of the extremity of the wire; that is to say, making those poles answer, the positive to the top of the wire, and the negative to the bottom, and placing, in each of these positions, the wire sometimes to the east and sometimes to the west, of the south extremity of the needle; and *second*, repeating the same experiment upon the northern extremity of the same needle, the following were the results:

The *positive* voltaic pole being at the top, and the *negative* at the bottom, the conducting wire being retained in a vertical position, and brought to the *west* of the *south* pole, attracts it;—to the *east* repels it;—to the *west* of the *north* pole repels it;—to the *east* attracts it.

The *positive* pole being at the bottom, and the *negative* at the *top* of the wire, the wire being brought to the *west* of the *south* pole, repels it;—to the *east* attracts it;—to the *west* of the *north* pole attracts it;—to the *east* repels it.

Besides these experiments, others on magnetism have been made by the French Savans, Sir HUMPHRY DAVY, and also by Mr. BARLOW and Mr. LECOUNT. The last two gentlemen have published separate tracts relative to this subject, which have excited considerable attention.

It is said that bars of iron which have remained long in a vertical position, acquire a magnetic property, the upper end being south and the lower end being north; but Mr. LECOUNT says that it requires no time whatever for iron to acquire this property; its communication is instantaneous. It may indeed require time to occasion it to retain this property. Nor is the supposed fact of its polarity correct, excepting in the northern magnetic hemisphere: in the southern it is perfectly contrary; the upper end being a north pole, and the lower a south.

Iron of all kinds, whether bars, circles, guns, bolts, hoops, &c., and whether placed horizontal, vertical, or in any inclination or position whatever, is acted upon in the strongest manner, by the magnetic effluvia, and that most instantaneously: their action is varied in a moment by the slightest change in the direction of the iron. Every piece of iron has two poles, which have each their respective powers of attraction and repulsion; and these poles, which are communicated by the magnetic effluvia, are instantaneously altered and reversed, &c., by the slightest change in the position of the iron; so that a bar of iron eight feet long, laid horizontally, may, by moving one of its ends one inch, have it altered from a north to a south pole. The changes which are requisite in the position of the iron to produce this effect, are subject to the following law: a plane, or circle, held east and west, (magnetic,) and at right angles with the direction of the dipping needle, will, in any part of the world, divide the north from the south magnetic effluvia, each lying on that side to which the dipping needle points; and, by referring the position of all iron bodies to this plane, the line of intersection shall divide the iron into north and south polarity, provided it is of uniform thickness. If it be not of uniform thickness, the intersection must be drawn not through the centre of its length, but through its centre of gravity. This plane will therefore be vertical on the magnetic equator, and horizontal when the dip is either 90° N. or 90° S.; and will be inclined proportionally to the dip between these situations.

The immense number of pieces of iron, both in ships of war and merchantmen, having each of them polarity, and that polarity instantaneously and continually shifting, and often reversing with the slightest alteration of the ship's head, thus presents an attractive power to the compasses, which is continually acting on them in a direction which is regulated by their relative positions, and thus produces the variation in them so often observed. Hence it would appear necessary that, before any vessel proceeds on a voyage, the variation to which the compass is liable from the iron in the ship should be carefully ascertained, by experiment, so that the errors relative to the compass, from the attraction of the iron, may be corrected.

The last voyage of Captain PARRY to Baffin's Bay, has also been productive of important results relative to the direction of the needle. The ships, as was supposed, crossed the magnetic meridian in lon. 100 west, about which place the variation of the compass had changed from 124 west to 166 east.

Magnolia; line 9, for *nipelata* read *nipetala*.

Mammalia; for *belluræ* read *belluæ*.

MANAKIN, or *Pipra*, a genus of birds, containing thirty-one species, inhabitants of the warm climates of Asia, Africa, and America; the following are the chief:

The *Rupicola*, Rock, or Crested manakin, has the crest erect, edged with purple; body saffron colour; female and young birds brown, size of a small pigeon; length from ten to twelve inches; eggs two, white; builds in the clefts of remote rocks; inhabits South America.

The *Musica*, or Tuneful manakin, is black, beneath orange, front and rump yellow; crown and nape blue; chin and throat, bill, and legs black; four inches long; its note is musical, and forms a complete octave, one note regularly succeeding another; inhabits St. Domingo.

Marle; Page 764, Col. 1, line 29 from the top, for *from* read *for*.

Marsh moss; for *menium* read *mnium*.

Master; line 19, after *and* add *the master of*.

Matter. See PUS.

MEDICINE CHEST, add, a small box of scales and weights should always be kept in it.

Metallurgy; for *act* read *art*.

Moiree metallique. See TIN PLATE.

Moxa; for *languinous* read *lanuginous*.

MORRIS, or *Leptocephalus*, a genus of fishes consisting of one species, the

Morisi, having a small narrow head, body extremely compressed, without pectoral fins; four inches long; found in the sea near Holyhead.

MOVING PLANT, or *Hedysarum gyrans*, is a native of Bengal. This extraordinary plant has a constant and voluntary motion, consisting in an alternate meeting and receding of the leaflets, a motion which seems totally unconnected with any external stimulus; certainly not dependent on the light of the sun, for they move in the dark as well as in the light. Their common motion will continue for twenty-four hours, in a branch lopped off from the parent stem, if put into water.

The plant grows to four feet in height, and produces yellow flowers; the leaves are ternate, ovate, lanceolate, obtuse; the lateral ones very minute. The root is annual or biennial.

MURJOE BUSH, or *Picramnia antidesmia*, grows in the copses and woods of Jamaica; rising about nine feet from the ground, with alternate, ovate, pointed leaves; it yields numerous red berries, which, when ripe, are a jet black; the negroes make a decoction of them and drink it in dyspepsia and syphilis.

MUSK-FLOWER, Musky, Sweet Scabious, or *Scabiosa atro-purpurea*, is a biennial plant, its native soil undetermined, but probably the South of Europe. Its flowers are dark purple, or chocolate, with white anthers; there are, however, several varieties in colour; some purple approaching to black, others pale purple; some red, others variegated. The leaves are pinnatifid and cut. This plant is valued for not only the beauty, but the smell of its flowers, which is very similar to musk. It is most readily propagated by seed. See Scabious.

N.

NAN NIC

NANKIN DYE. Take of annatto and subcarbonate of potash, of each equal parts; let them be boiled in a small quantity of water. The proportion of annatto is to be added or diminished as the colour is wanted to be made deeper or lighter. It is used to restore the faded colour of nankin cloth. See Annatto.

Nard. See Spikenard.

Nasturtium. See Tropæolum.

Nickar, for *Guilandia* read *Guilandina.*

After NOAH'S ARK, read *or Arca.*

O.

OX OX

OAK-APPLE, a whitish spongy substance, found frequently in this country on the branches of the oak in the summer months. It is, we believe, the nidus of an insect; probably of some of the genus *Cynips*, or Gall-fly.

Oily grain. See Sesamum.

Ox; Page 873, col. 2, line 5 from the top, for *Zebra* read *Zebu.*

Ox-fly. See Flog.

Ox eye, a bird. See Creeper.

OX-EYE, or *Buphthalmum*, a genus of plants consisting of twenty species, scattered over the globe, but none natives of this country. The *arborescens*, and *helianthoides* are the species chiefly cultivated in our flower gardens: the corol of both these is of a beautiful yellow colour.

P.

Paddy. See Rice.

PAINT, *a cheap, for pales, gates, &c.* Take of road dust sifted fine, and whiting, of each four pounds and a half; blue-black, and queen's blue, of each one pound and a half; of yellow ochre two pounds. All these must be pulverized very fine, to which is to be added boiling water sufficient to make the whole into a stiff paste. Add to it a sufficient quantity of linseed oil bottoms to make it of the consistence of pap. Lay it on with a hard brush. For want of the oil bottoms the oil itself may be used; but it will be more expensive.

Palm, the Jamaica. See THRINCIA.

PAP. We omitted to state the best mode of making this useful article under infancy. It should be an invariable rule, never to make it with flour, as that will always produce more or less flatulence. There is a kind of bread in London called *rusks*, which is very proper for this purpose when not too hard baked. But in the absence of this, plain biscuit which has been well fermented and baked, without butter, will also make good pap. If bread be used for this purpose, it should be baked or toasted.

Paregoric Elixir. See CAMPHOR.

PARROT FISH, or *Coryphæna psittacus*, a species of the genus CORYPHÆNA, of which nineteen have been described. They are inhabitants of the seas of Europe, Asia, and one or two species of America. The *Hippuris* is from four to five feet long; body thick, compressed, covered with thin strongly fixed scales; its colour is sea green spotted with orange; tail forked; back blue; belly silvery; it is sometimes erroneously called the dolphin; inhabits the Mediterranean; it is very swift, vigorous, and voracious; when alive in the water it has a fine golden splendour which vanishes when dead; flesh tolerably good. The *Belifera* is silvery ash; inhabits the Southern Indian ocean. The first-named species is a very beautiful fish, inhabiting the coasts of Carolina, but soon loses its colours on death.

Parvana wood. See WILD RICINUS.

Parys; line 6, for *suphate* read *sulphuret.*

Pear-tree, the Alligator. See BAY.

PECK, see WEIGHTS and MEASURES, and BUSHEL.

PERCH, or POLE, a measure. See WEIGHTS and MEASURES, and ACRE.

Philonium. See CONFECTION.

Piles; Page 927, Col. 1, line 26, for *protusion* read *protrusion.*

PIONY, PEONY, or *Pæonia*, a genus of plants consisting of seven species, of which the following are the chief:

The *Tenuifolia*, or Slender-leaved piony, is a native of Siberia.

The *Officinalis*, or Common piony, is too well known to need description. Of this there are two principal varieties, distinguished, it is said improperly, into male and female piony. The flowers of the latter are single, and composed of five or six large, roundish, red petals; the seeds are contained in pods, which burst spontaneously, and when in this state present a curious and ornamental appearance. The flowers of the former are double and of a deep purplish red. The flowers of both sorts appear in May; they are natives of Switzerland. The single sorts are easily raised by seeds, and the double by parting the roots. The seeds should be sown in Autumn, soon after they are perfectly ripe. The roots of the old double-flowered plants may be taken up in the beginning of Autumn and divided, so as to have but one bed or eye, or more, to each part or crown, without which they will never form good plants. A variety lately introduced with double flesh-coloured flowers.

The roots of this species were formerly in the materia medica; and recommended in some spasmodic diseases, but modern medicine takes no notice of them.

Besides the preceding species, the following species are also cultivated as flowers:

The *Corallina*; the *Paradoxa fimbriata*, or Double fringed; the *Peregrina compacta*; the *Albiflora*, with single, double, and double sweet-scented flowers; and the *Albiflora tatarica.*

Pipe fish; for *Sygnathus* read *Syngnathus.*

Pleasure. See SYMPATHY.

POISONS. Although we have treated copiously of poisons under the general head POISON, as well as in various other parts of our work, we are not willing to lose any opportunity of communicating intelligence, relative to this subject, which may be of importance. M. **Orfila** has published a recent paper on a *New process for the discovery of the greater part of Mineral Poisons when mingled with coloured liquids*, which deserves our careful attention.

There is often great difficulty in the discovery of poisonous substances of the mineral kind which have been mingled with coloured liquids, such as red wine, decoction of coffee, &c. *Chlorine dissolved in water* possesses the power of depriving of their colour red wine, decoction of coffee, and of tobacco, &c.; and it decomposes but a small number of the mineral kind, and consequently it may be advantageously employed for such purposes. In stating that chlorine deprives red wine, coffee, &c. of their colour, it is not meant that they render those liquids colourless, but only that it destroys their red or brown colour; indeed, the mixture obtained is of a yellow colour; this shade does not prevent the principal tests from acting on mineral poisons as they would do if those poisons were merely dissolved in water.

A mixture was made of a solution of white oxide of arsenic in water and red wine; a sufficient quantity of liquid and concentrated chlorine was poured into it to cause it to assume a yellow colour; a reddish-yellow precipitate was formed, composed of chlorine and the glutinous matter contained in the wine; this precipitate was suffered to settle, and the liquor was filtered. A *white* precipitate was produced in the filtered liquor by lime-water; a *green* by sulphuro-ammoniated copper; and a *yellow* by hydro-sulphuric acid, (sulphurated hydrogen gas dissolved in water;) the presence of white oxide of arsenic was demonstrated.

A mixture of corrosive sublimate and wine was discoloured by concentrated and recently prepared chlorine; it was filtered after the precipitate of the chlorine and the vegeto-animal matter had settled; the filtered liquor produced a *yellow* precipitate with potash; a *white* with ammonia; and a *black* with the hydrosulphurets, as if the sublimate had been dissolved in water.

A mixture was made of decoction of coffee and an aqueous solution of corrosive sublimate; the combination was treated with chlorine and the tests above mentioned, and precipitates of the same colour were obtained. See the Paper of M. **Orfila** at large, in the Medical and Physical Journal for March, 1821.

Pole, a measure. See **Acre**, and **Weights** and **Measures**.

Polemonium. See **Valerian, the Greek**.

POPULATION. We have alluded in several parts of our work to Mr. **Malthus** and his anti-social doctrines on population. Although most persons at all conversant with these doctrines, and with nature and truth, felt that they must be erroneous, yet this feeling was not sufficient in itself to warrant their rejection. It gives us pleasure to be enabled to state, that Mr. **Godwin** has lately published an answer to Mr. Malthus, which completely refutes the specious sophisms of that gentleman, and has, we hope, set the whole question of population at rest.

Potash; Page 973, Col. 1, line 25 from the top, for *it into* read *into it*.

Protea. See **Silver tree**.

PUDDING STONE, or *Breccia*, a genus of earths, consisting of fragments of stones, generally of a rounded form, conglutinated by an earthy or metallic cement; it is found only in mountains of a more recent formation. The cements more commonly observed are talcose, calcareous, argillaceous, and siliceous; the last by far the most frequent of the whole. Pudding stone is found in various parts of the world; some is found in England which receives a fine polish, and is very ornamental. Green pudding stone is found in Egypt.

PUPE, or **Pupa**, in natural history, the chrysalis. See **Chrysalis**.

Pyrmont water. See **Mineral Waters**.

Q.

QUERCITRON BARK, the bark of the *Quercus nigra*, or Black oak, a native of North America, of which there are several varieties. This bark is used for dyeing yellow; it was brought into notice by Dr. Bancroft, who in the 25th year of his late Majesty's reign obtained, for a term of years by Act of Parliament, the exclusive privilege of using and applying it in dyeing. See our article Dyeing; and also Bancroft *on the Philosophy of permanent colours.*

R.

RAFFLESIA, a new genus of plants, natives of Sumatra, has been lately noticed in consequence of the extraordinary dimensions of the flower. It springs directly from a horizontal root; the bud is covered with many round, intricate, dark brown, floral leaves or bracteæ, and has very much the appearance of a cabbage, which it also nearly equals in size. The expanded flower measures full three feet in diameter, the tube holds about twelve pints, and the weight of the flower about fifteen pounds. It appears to be allied to the *Asareæ*, *Aristolochiæ*, or Birthwort, and the *Passiflora*, or Passion flower.

Rheumatism: Page 1027, Col. 1, line 16 from the top, for *to* read *of*.

Rope, a measure. See Weights and Measures.

Rope grass. See Melic-Grass.

S.

Sack, a wine: last line but one of the article, for *see* read *sec.*

Sand flood: last line, for *red* read *reed*.

Salmon: Page 1059, Col. 2, line 26 from the top, for *Eperianus* read *Eperlanus*.

Saw-wort: at the conclusion of the article add, see Thistle, the Common.

Scabious. Line 21, for *perennial roots*, read *perennial sorts*.

SCAR-FISH, or *Elops*, a genus of one species only, inhabiting Carolina, and differing only from the salmon in wanting the fleshy back-fin.

Scutellaria. See Skull-cap.

Sea serpent, the great: for *Scollophis* read *Scoliophis*.

Serpent: see Warted snake, which should have been included under the general head serpent.

Shave-grass. See Horse tail.

SHIPWRECK. Since the article shipwreck was printed, an account of an apparatus for saving lives in case of shipwreck, has been published in the 38th volume of the Transactions of the Society of Arts. This invention is by Mr. Trengrouse. Although resembling Capt. Manby's apparatus in some particulars, it appears to be more likely to be useful in actual practice. The initial velocity of a ball or shell recommended by Capt. Manby, is so great, as to make it by no means easy, under the most favourable circumstances, to supply the cord attached to the ball with sufficient expedition; whereas, the flight of a rocket being not only much slower than that of a cannon ball, but not immediately acquiring its utmost velocity, the risk of breaking the cord is greatly diminished. From experiments made at Woolwich, it appears that a rocket of 8 ozs. with a mackarel line attached to its stick, ranged to the distance of 180 yards; and that a pound rocket in similar circumstances, ranged 212 yards. Experiments made by the Society of Arts, demonstrated that a rocket 1½ inch in diameter will carry a cord completely across the Serpentine river in Hyde Park. The shortest of these ranges exceeds the distance of many stranded ships from the shore, especially on a

rocky coast, and therefore the probable utility of Mr. Trengrouse's apparatus may be thus ascertained. For further particulars, the Society's volume may be consulted.

SIDEROGRAPHY, an engraving **on steel or iron**, invented by Mr. **Jacob Perkins**, **late** of Philadelphia, but now **resident** in this country; **and** for which **he has obtained** a patent, a particular **account of which**, with engravings and **many specimens** of this novel art, will **be found** in the first volume of the *London Journal of Arts*.

To obtain an engraved plate according to the method of the patentee, the **subject** is first to be engraved upon a **block of steel, prepared** by a peculiar **process, and rendered so extremely soft as to** be capable of being cut by the **same mode** of engraving as copper; **when** the engraving on the soft steel is **finished, the block** of **steel is** hardened **without** injury to the engraving, and **being** placed in a rolling engine, a small **cylinder of soft steel is** repeatedly **worked upon the block** until the cylinder has received the impression of the **engraved block** in relievo. This cylinder, after being hardened, becomes a **tool**, whereby to impress as many steel **or copper**-plates **as** may be required.

By this process writing, and every **kind** of ornamental engraving may be **first executed** on **blocks**, and afterwards **associated** together and transferred into **one cylinder**, which cylinder is to be the tool by which any number of steel or copper-plates may be impressed.

We consider this as one of the greatest improvements in the art of engraving that has yet been before the public. Amongst other advantages which it offers beyond engraving on copper is the great durability of the plates. We have seen a plate of this kind from which twenty-five thousand impressions had been taken without much, if any, apparent alteration in the appearance of the impression from it.

Spirit of Mindererus. See Vinegar.

SURMULLET, or *Mullus*, a genus of fishes comprehending six species; distinguished by having a round, long, red body, coated with large scales easily dropping off. The following are the chief:

The *Barbatus*, or Red surmullet, has the lower jaw with two cirrhi; body when deprived of its scales, red; nothing can be more beautiful than the colours of this fish when it is dying, and nothing more delicious than its flesh; inhabits the European, Mediterranean, and Pacific seas.

The *Surmuletus*, or Striped surmullet, has the body striped with four longitudinal lines; fins yellow; rays chiefly red; head large; from a span to a foot long; flesh equal to the last; found in the European, Mediterranean, and American seas.

Sword fish; for *Xiphius* read *Xiphias*.

T.

Tea: Page 1271, Col. 1, line 14 from the top, for 1180 read 1810.

TONQUIN, or Tonga Bean, the **fruit of** the *Dipterix odorata*, a species of the **genus Dipterix**, of which two have **been** described, both natives of South **America**. The only **useful** purpose to which the tonquin bean has been applied, is to give an agreeable odour to snuff.

TRAVELLING: for the treatment of wounds or fractures from travelling, see Fractures and Wounds.

Tuberose. See Polyanthes.

V & W.

Vinegar. Page 1286, Col. 2, line 27 from the top, after *equal*, add, ***in value***;—after *the*, add, *cost of the.*

Wasp. Page 1298, Col. 1, line 5 from the top, for ***evelopes*** read ***envelopes.***

Wolf-fish. For ***Anarchias*** read ***Anarhicas.***

G. Sidney, Printer, Northumberland-Street, Strand.